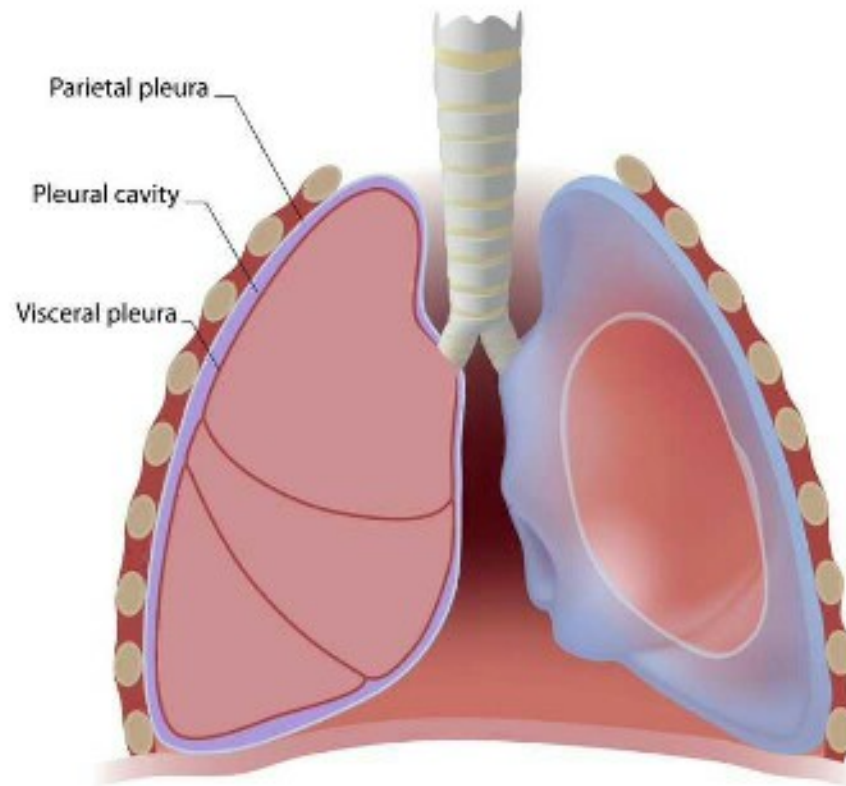


Introduction (Part I)



Dr. Tarek Abdelhamid M.D.

VISIT...

LANZAROTE
Caliente.COM

تحذير هام

هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية

هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية و لا يحق لأحد إستخدامه او تحميله أو إستنساخه أو إعادة طبعه أو طبع أجزاء منه بدون إذن مسبق من الدكتور طارق عبد الحميد (أو من ينوب عنه قانونياً). و من يتعدى على الملكية الفكرية المذكورة فسوف يتعرض للمسائلة القضائية عن جريمة إنتهاك حقوق الملكية الفكرية. و إستخدام الفيديوهات و المادة العلمية المذكورة مكفول فقط لمشتري واحد فقط و لأخذ تصريح إستخدام لأكثر من شخص برجاء الإتصال بالدكتور طارق عبد الحميد

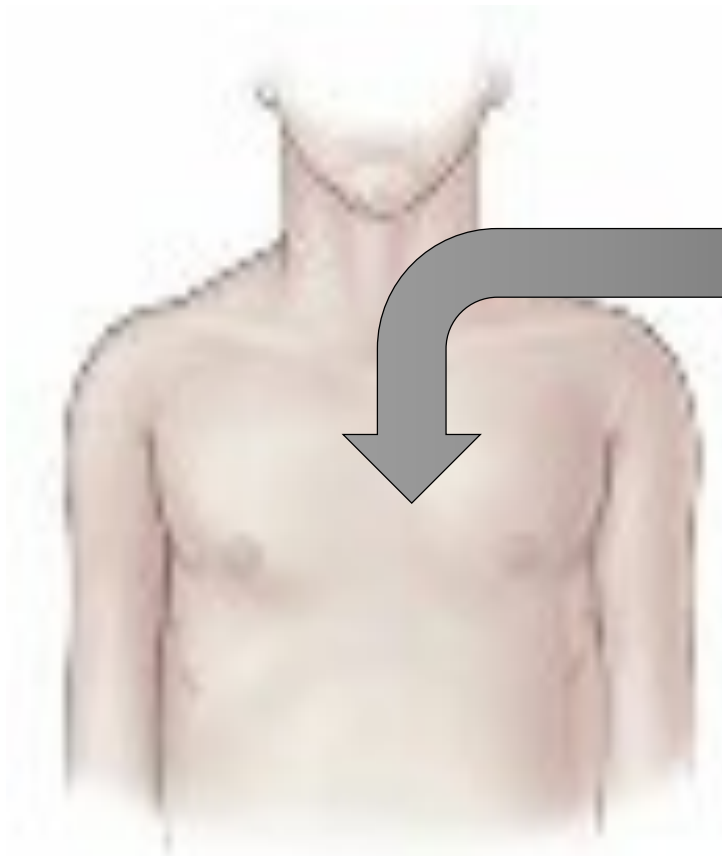




- 1 Inspection**
- 2 Palpation**
- 3 Percussion**
- 4 Auscultation**

Inspection

Shape and Symmetry



BULGE

Pleural effusion
Pneumothorax
Chest wall tumors

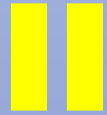
Retraction

Fibrosis or Collapse

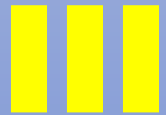
Palpation



Trachea



Mobility

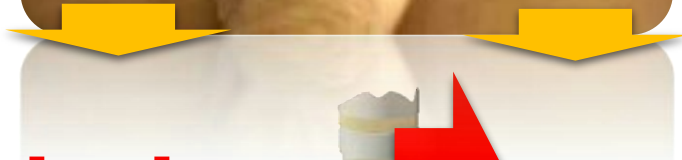


TVF

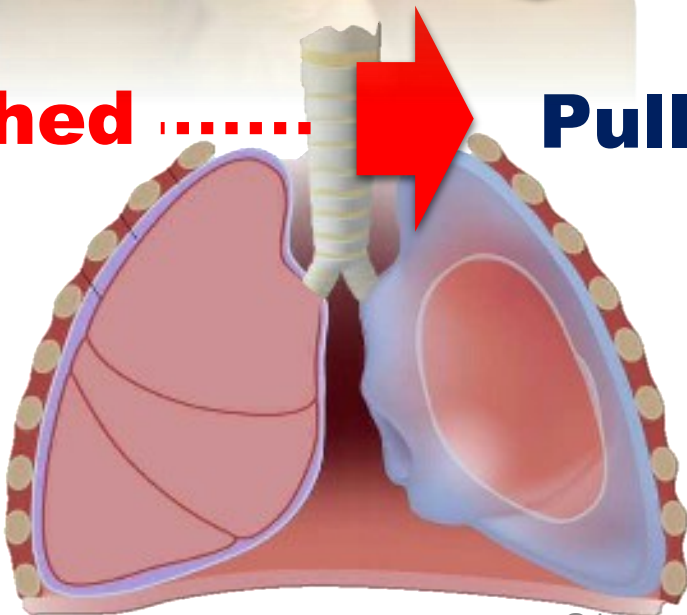
Trachea



Trachea



Pushed  **Pulled**



Trachea



It may be shifted either **Toward** the affected side (e.g. Upper lobe fibrosis or Collapse OR/ (**less commonly**)

Away from the affected side e.g. (Massive pleural effusion and Tension pneumothorax)

Mobility



Limited in all chest diseases

A- Unilateral: e.g. localized pulmonary fibrosis, consolidation, collapse, pneumothorax, pleural effusion

B- Bilateral e.g. in COPD or diffuse pulmonary fibrosis

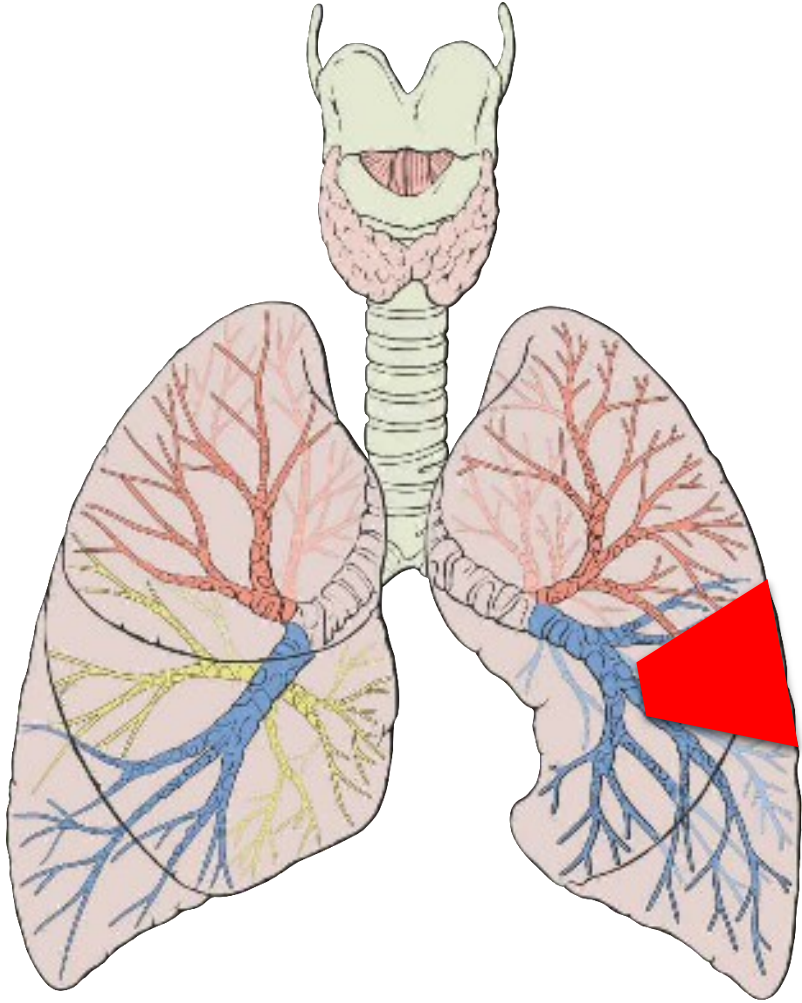


444

**Palpation
(TVF)**

**Auscultation
(VR)**

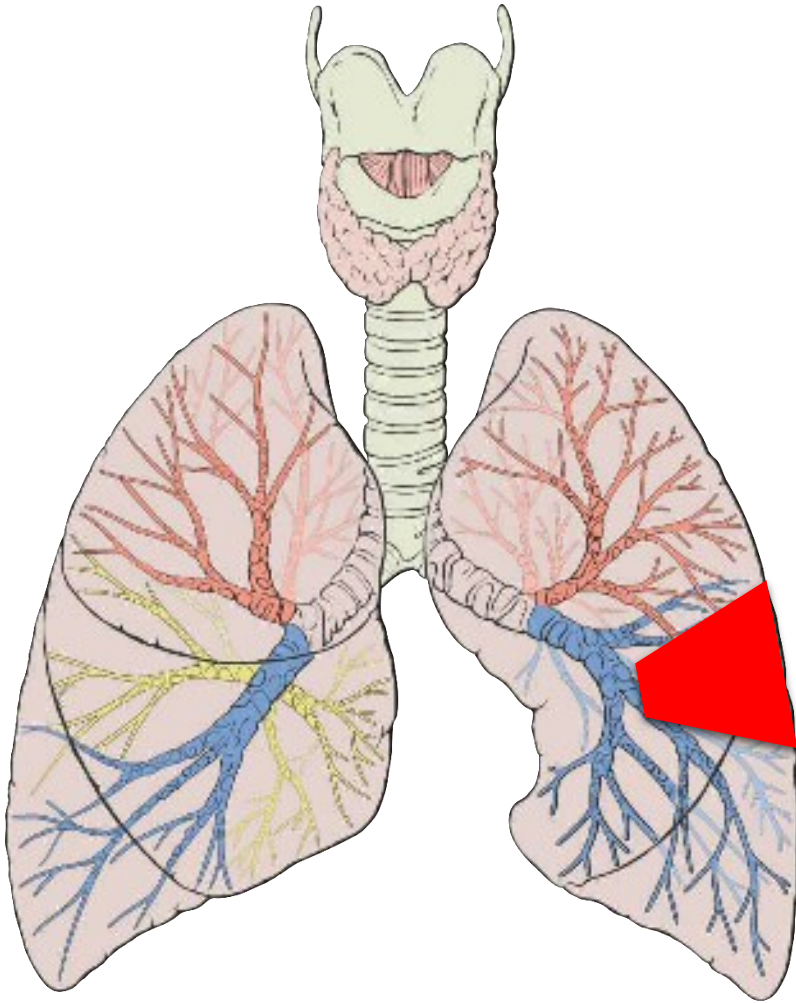
Lung consolidation



TVF

If +++++ (Whispered pectoriloquy)

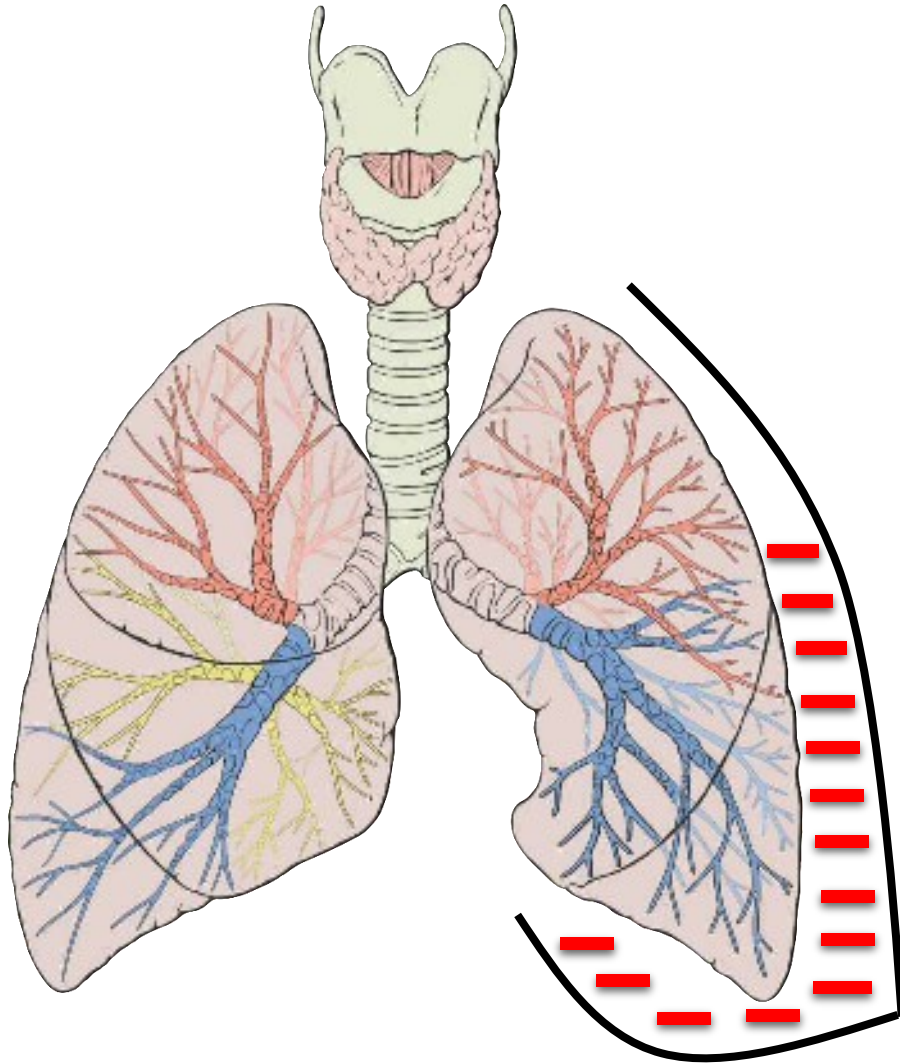
Lung consolidation



TVF

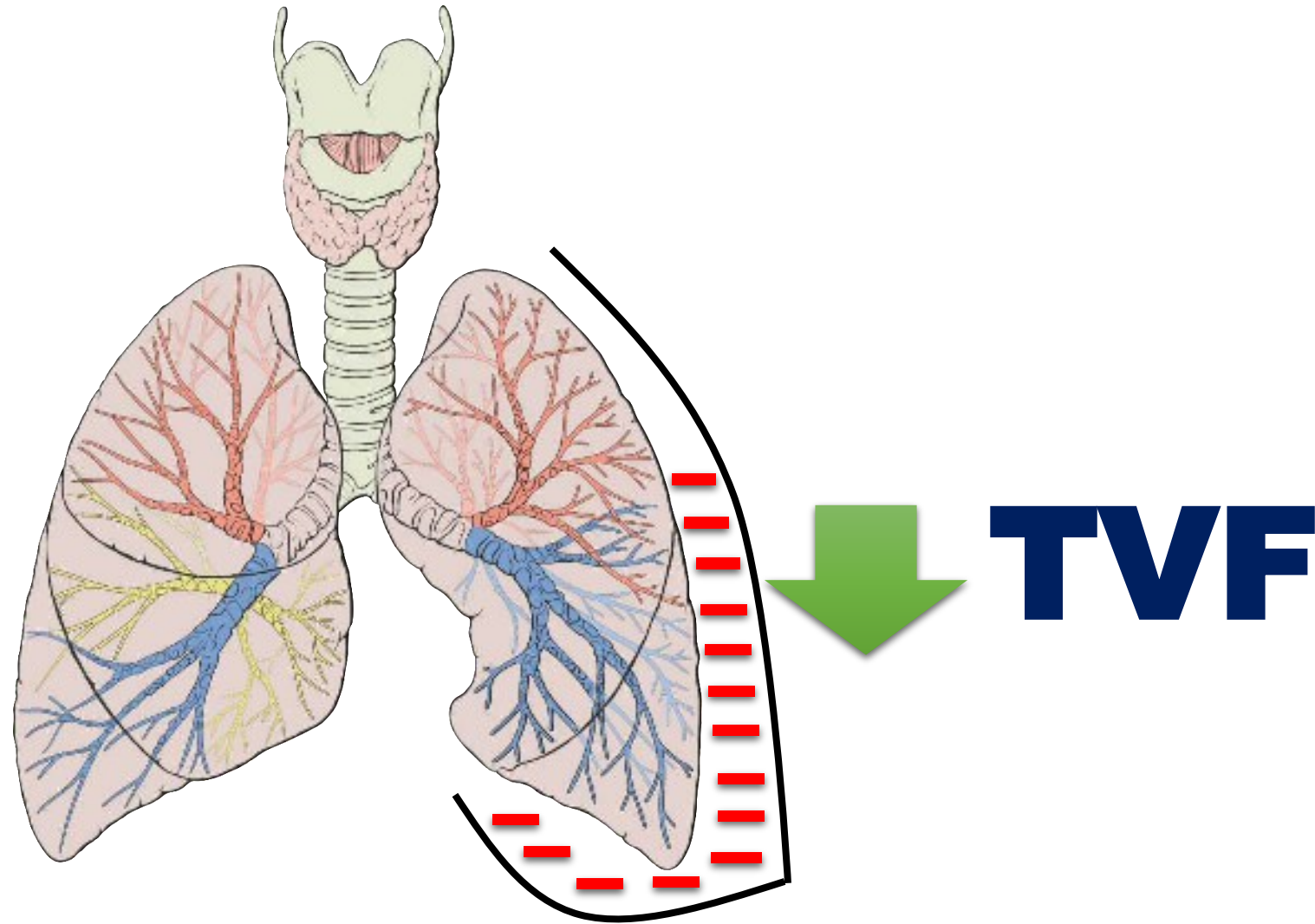
If +++++ (Whispered pectoriloquy)

Pleural effusion



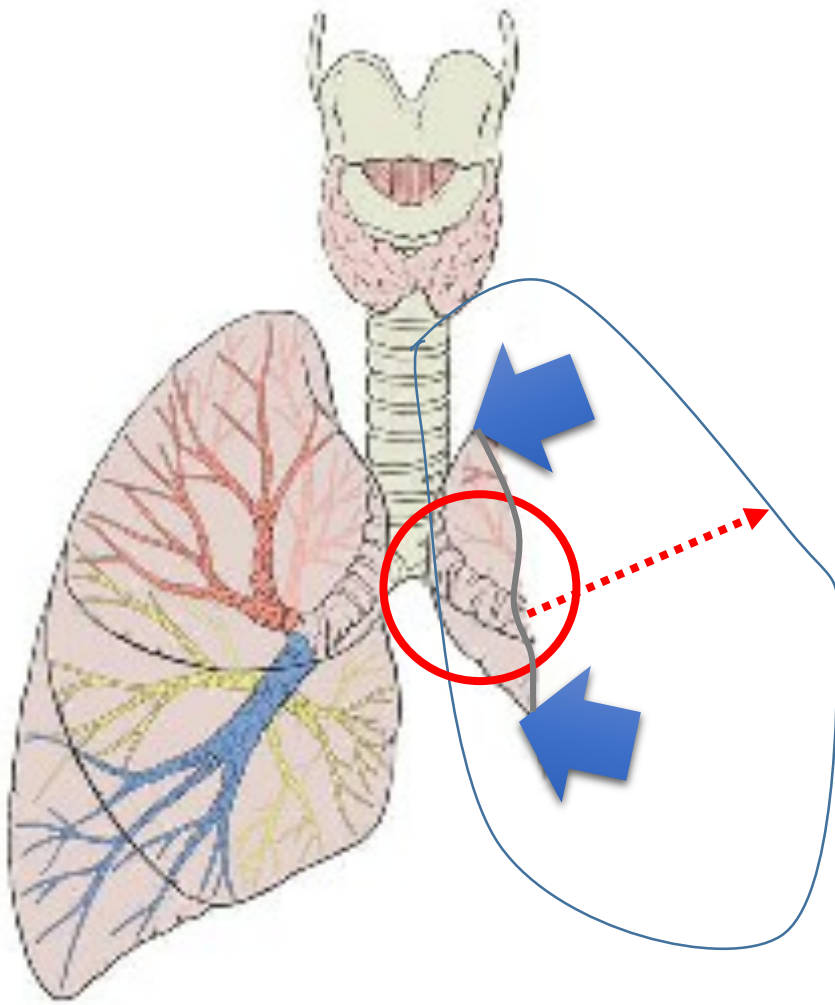
TVF

Pleural effusion



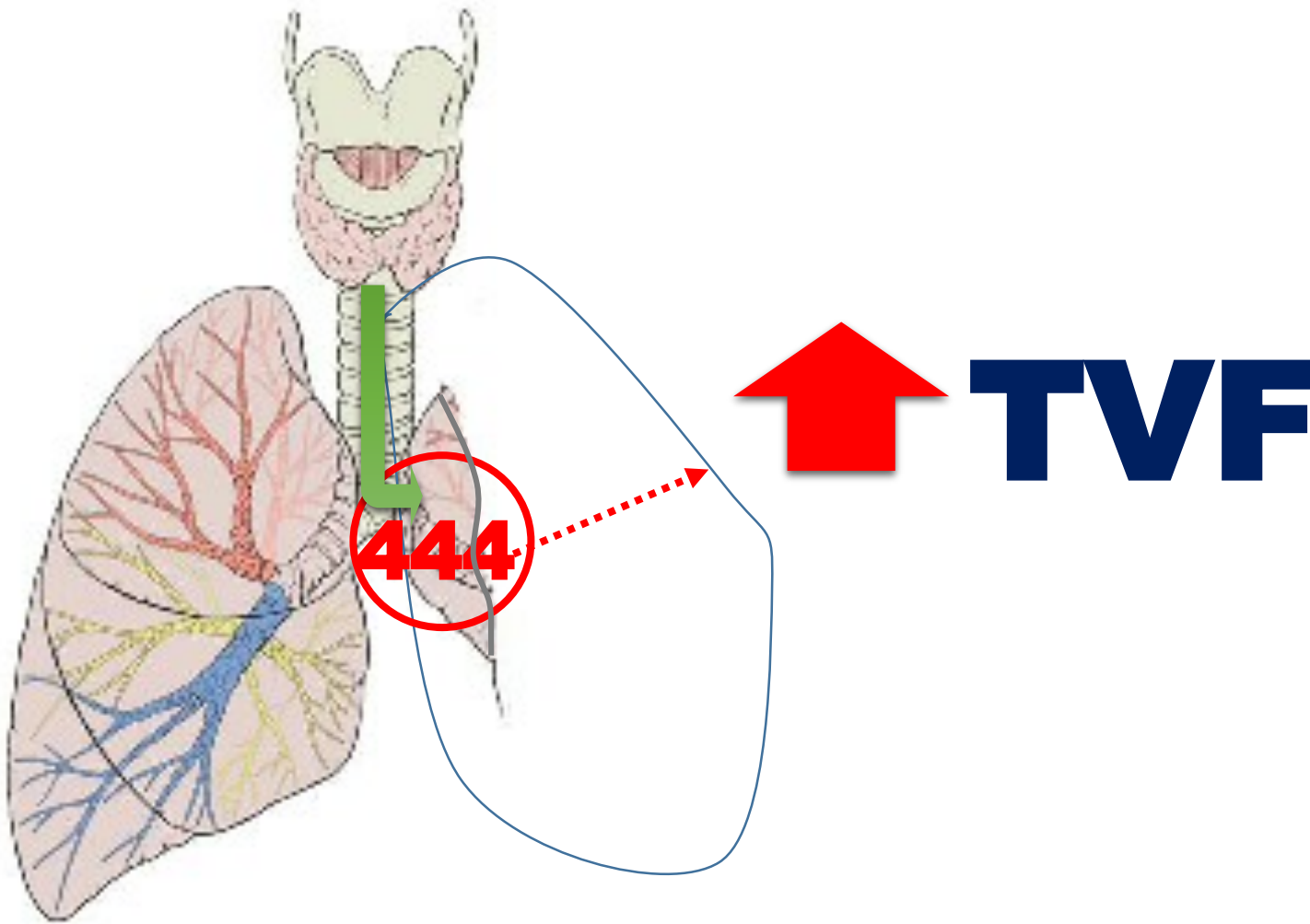
Aegophony?!

Massive effusion!

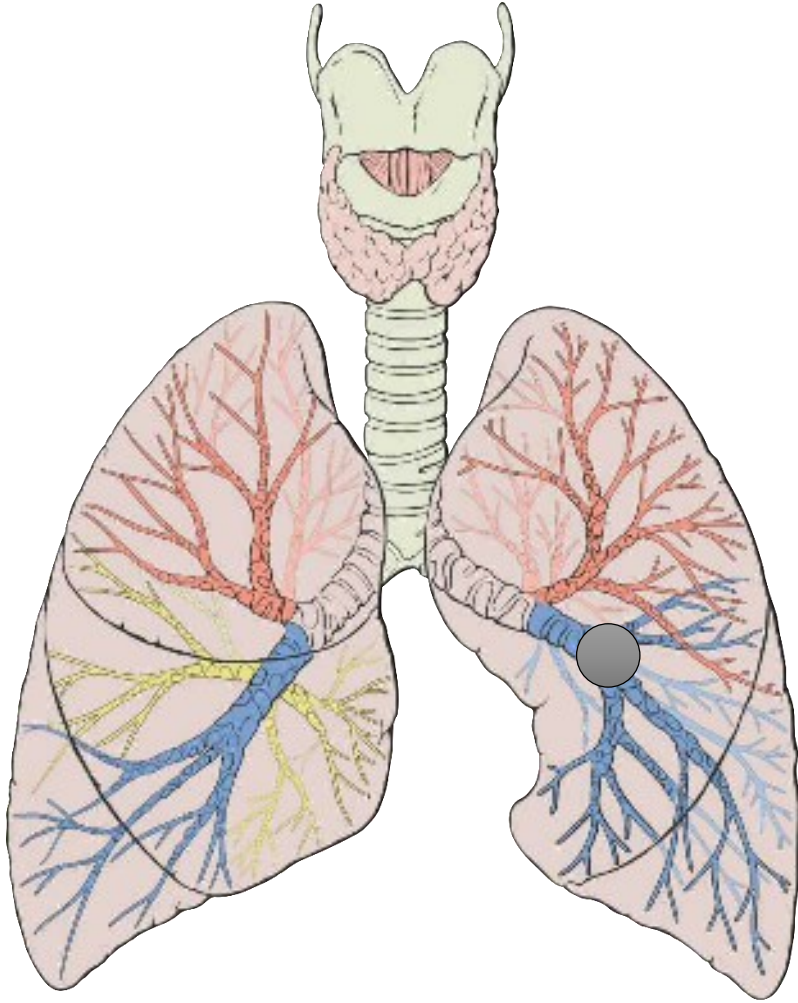


TVF

Massive effusion!

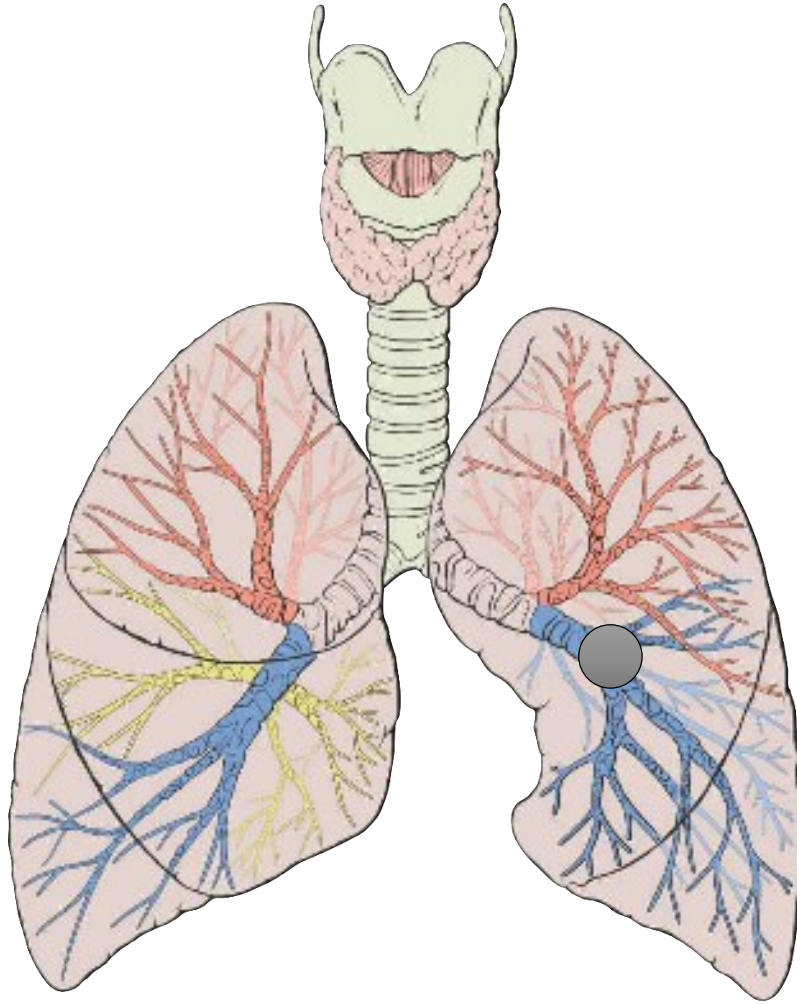


Bronchial Obstruction (collapse)



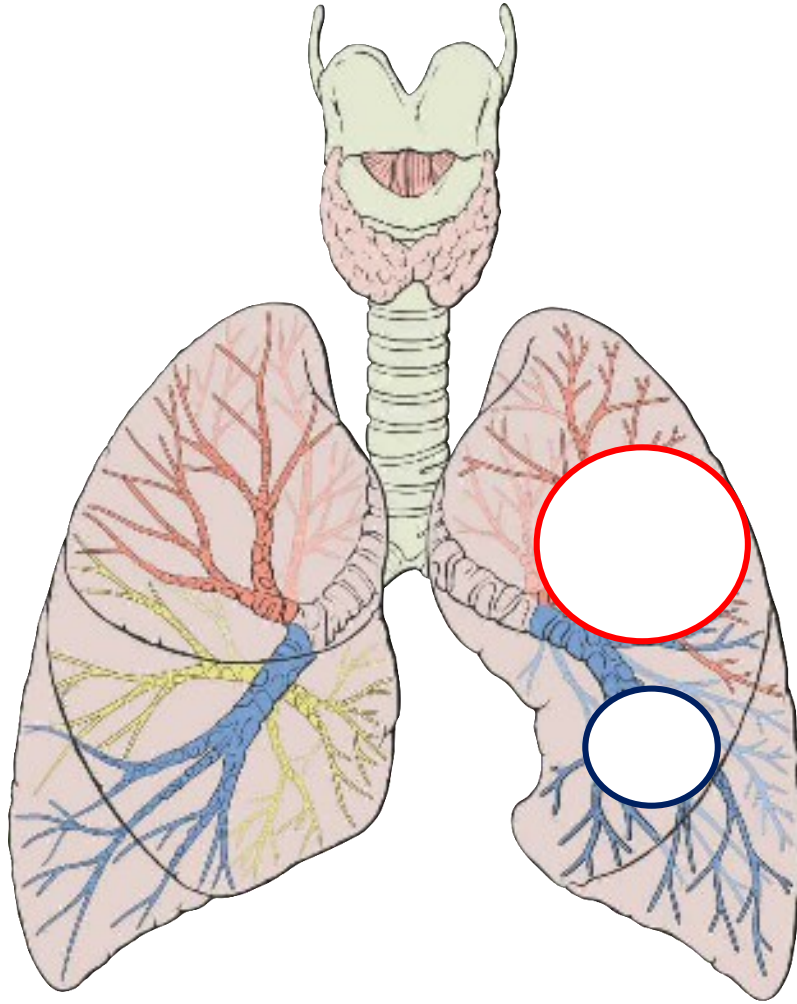
TVF

Bronchial Obstruction (collapse)

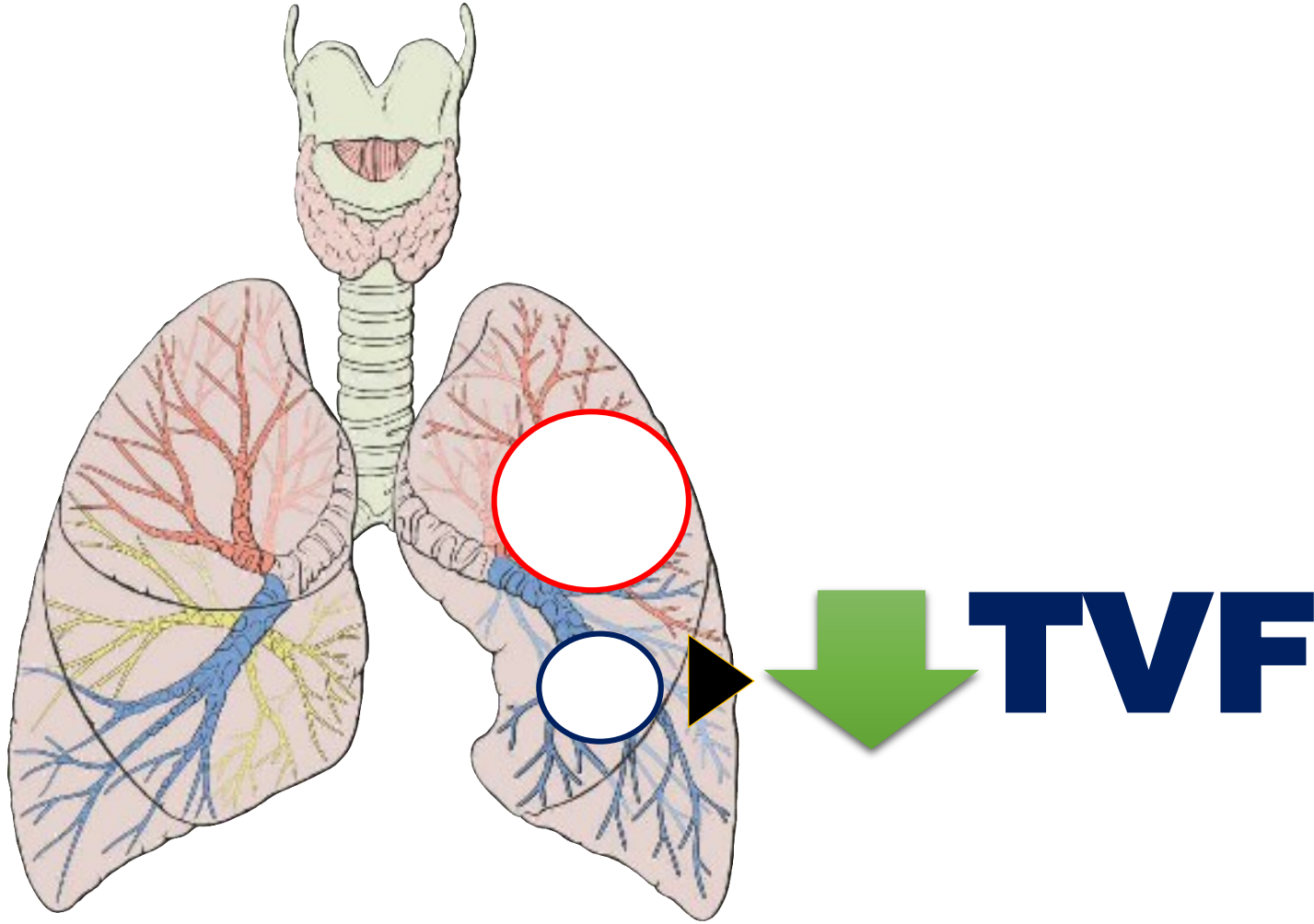


↓ **TVF**

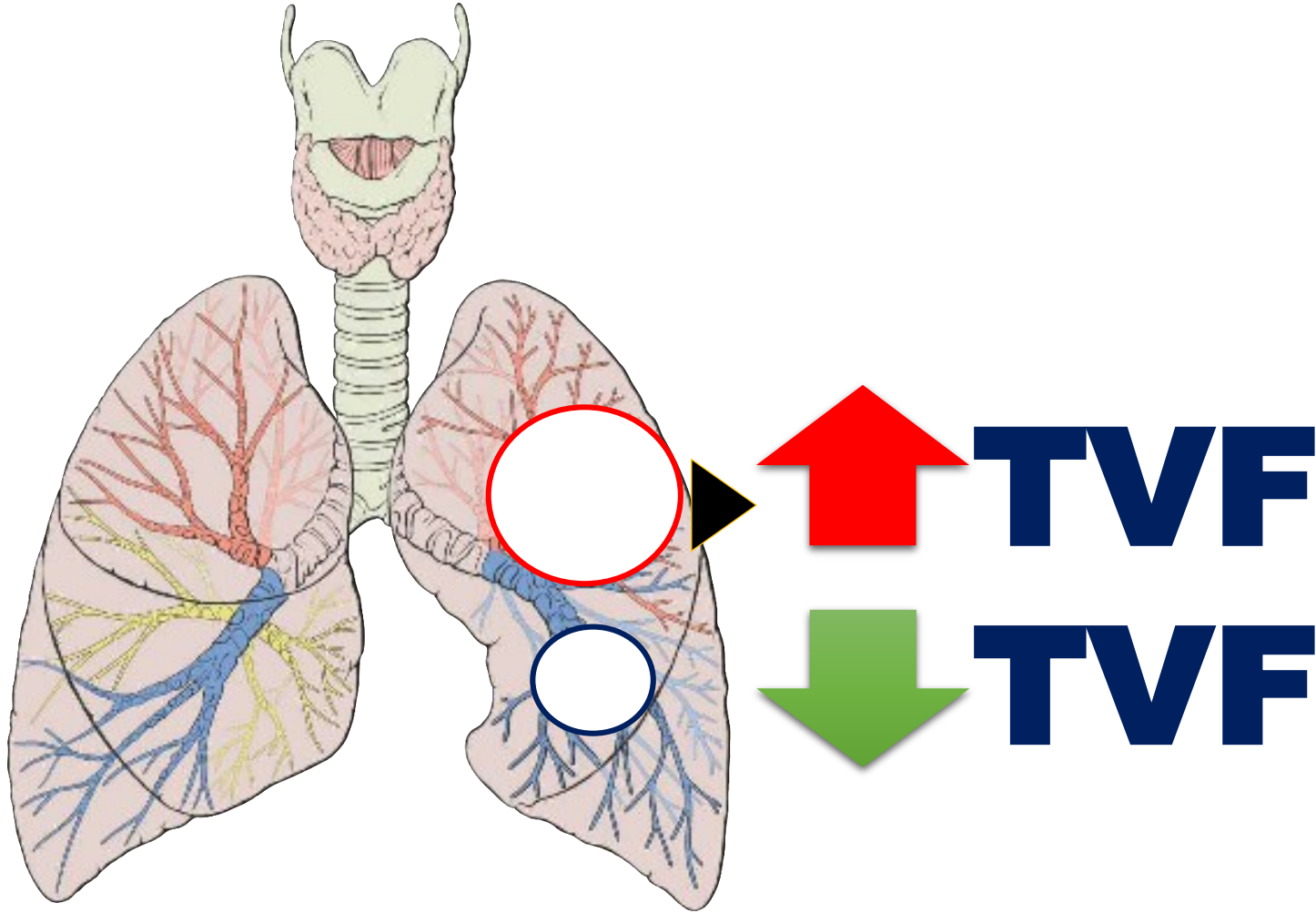
Lung cavitation



Lung cavitation



Lung cavitation



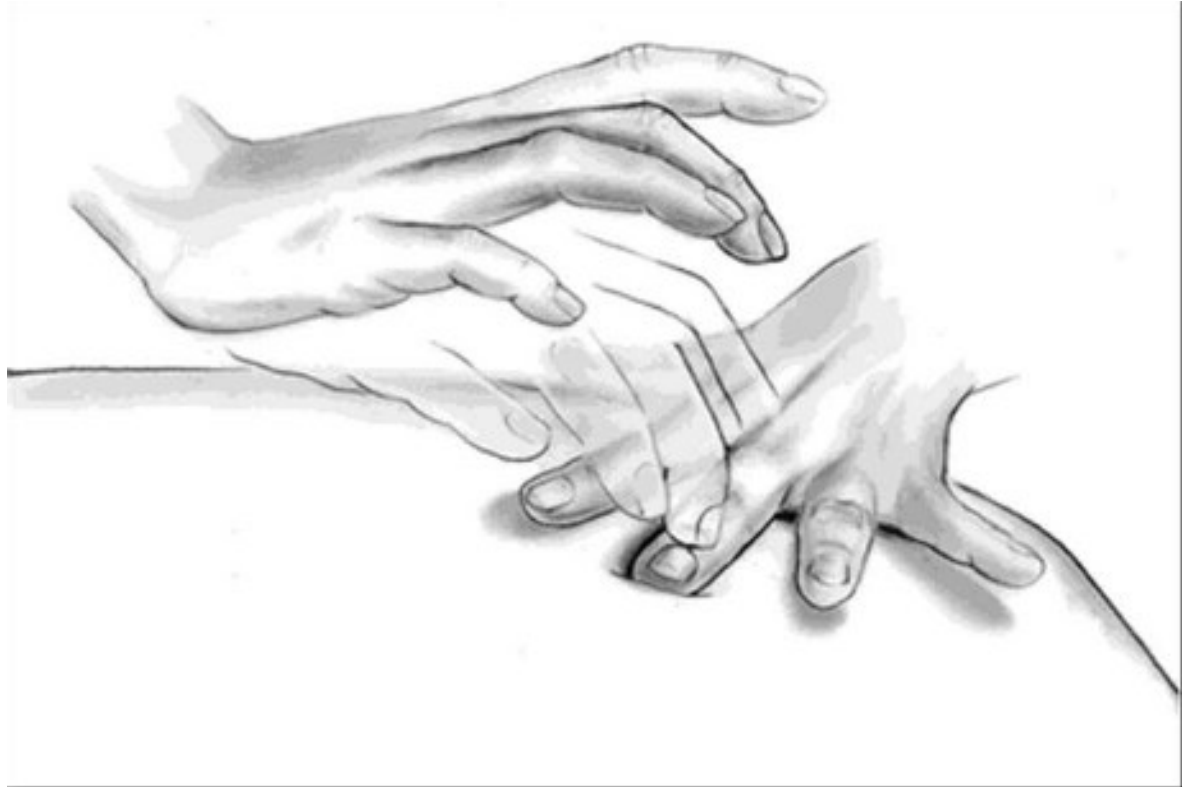
Percussion

Dullness

- 1- Consolidation
- 2- Collapse
- 3- Fibrosis

Stony dullness

In Pleural Effusion



Hyperresonance

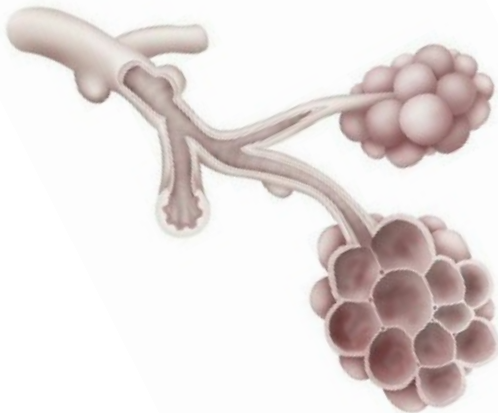
- ① Emphysema
- ② Asthma
- ③ Pneumothorax

Auscultation

Normal sounds

Vesicular Breathing

Bronchial Breathing



Added Sounds

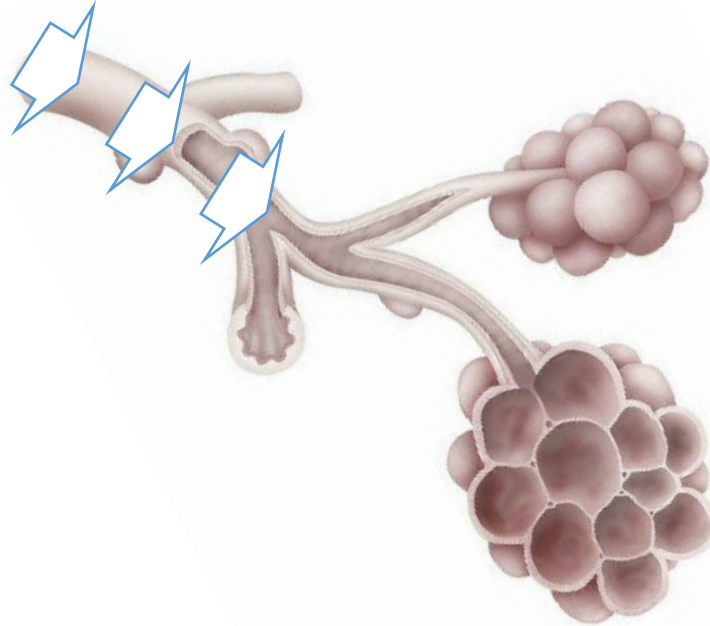
① Crackles

**② Wheezes
(Rhonchi)**

③ Pleural Rub

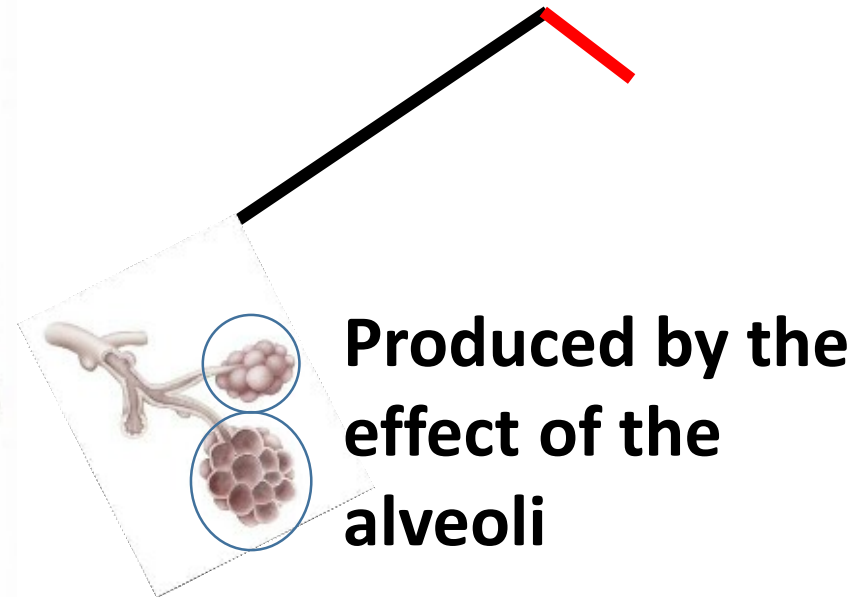
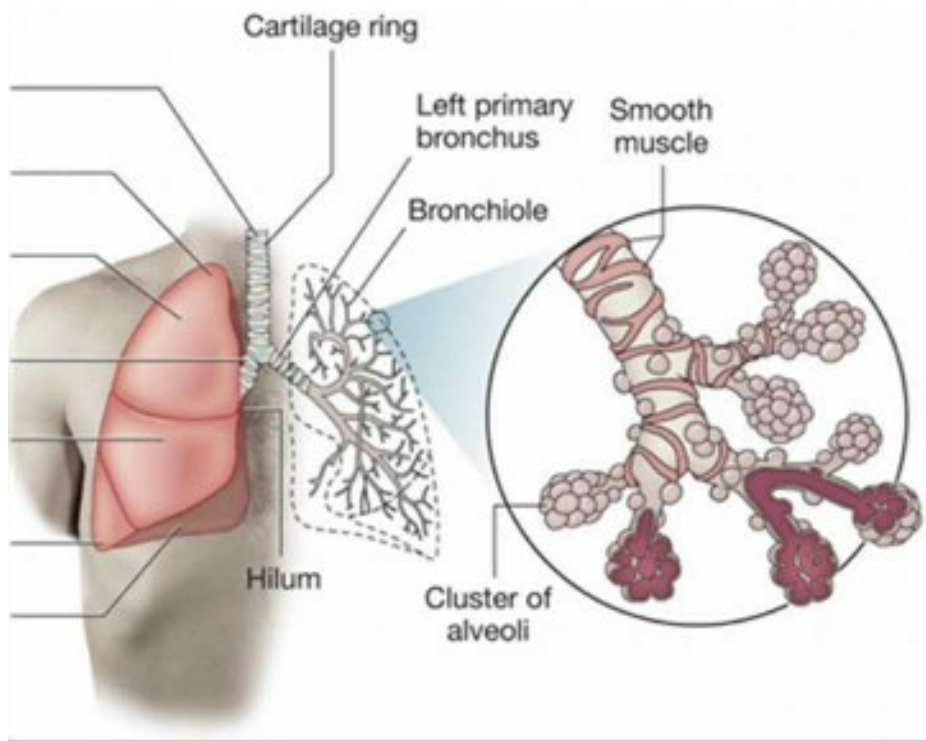
Normal sounds

Bronchial Breathing



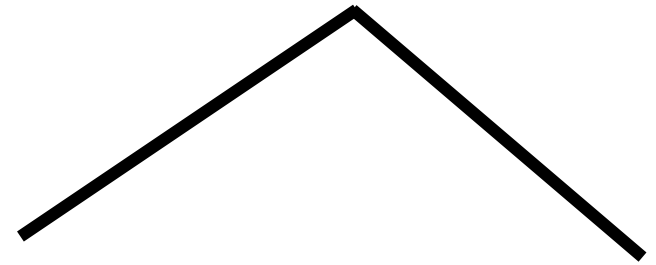
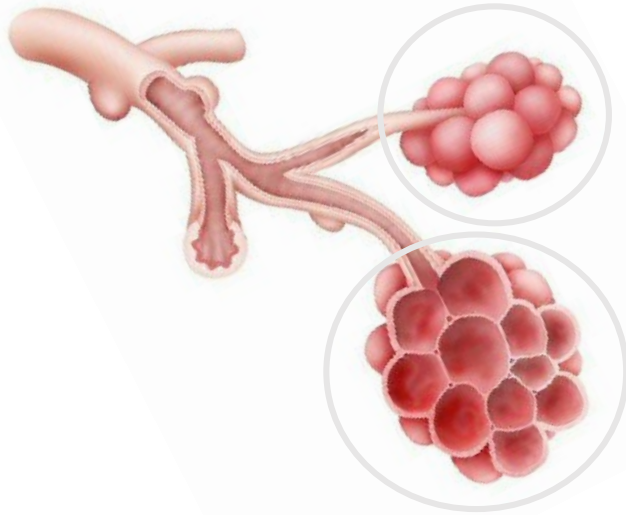
Vesicular (Alveolar) Breathing

Vesicular Breathing



- 
- 
- 
- 1 **Bronchi:** e.g. airway obstruction (bronchial asthma and COPD)
 - 2 **Alveoli:** Pneumonia- Lung fibrosis - Collapse
 - 3 **Pleura:** Pleural effusion- Pneumothorax
 - 4 **Chest wall:** Obesity

Bronchial Breathing



Normally: Over the trachea and main bronchi

Normally masked by the alveolar sounds. It is heard only when alveolar sounds are absent



Lung consolidation (Note: disappears if bronchial obstruction by sputum)

Lung collapse (over the upper part of Pleural Effusion)

Lung cavitation (?! Surrounding consolidation)

Lung fibrosis

Bronchial asthma



Bronchial asthma



Vesicular breathing



Bronchial asthma



Vesicular breathing



Added Sounds

```
graph TD; A[Added Sounds] --> B[① Crackles (Crepitations)]; A --> C[② Wheezes (Rhonchi)]; A --> D[③ Pleural Rub];
```

**① Crackles
(Crepitations)**

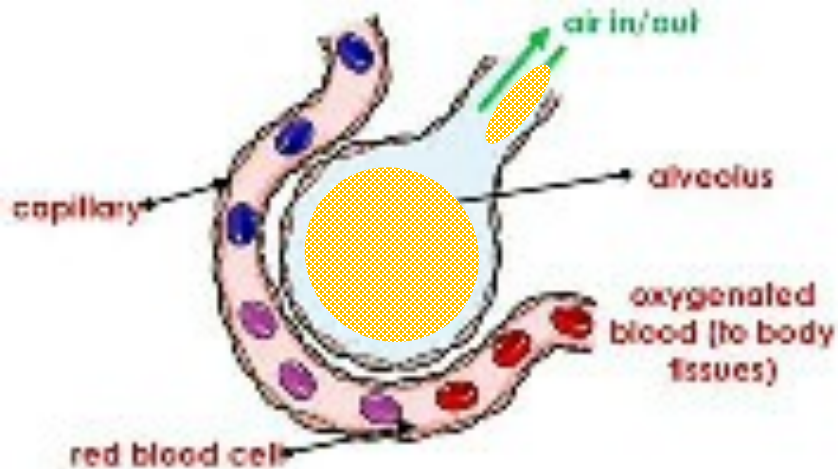
**② Wheezes
(Rhonchi)**

**③ Pleural
Rub**

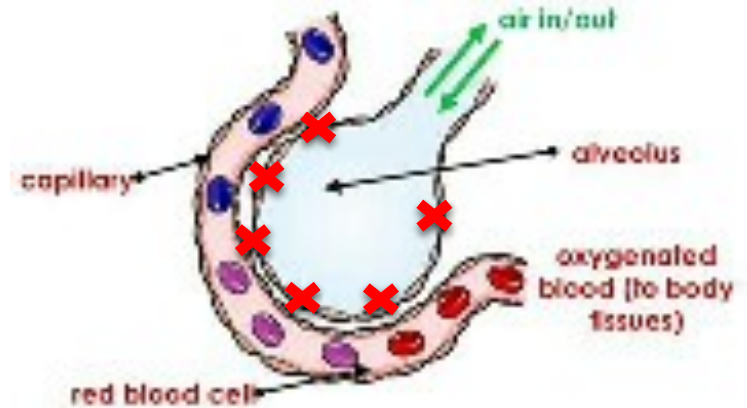
① Crackles

Interrupted sounds

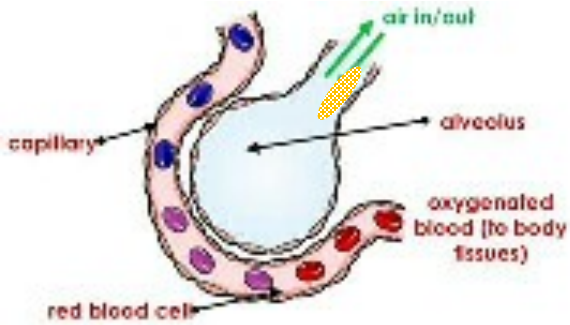
Bubbling of air through secretions



Sudden opening of alveoli when they are collapsed



Early inspiratory

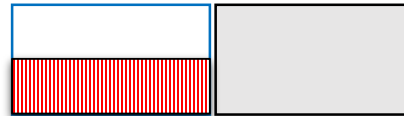
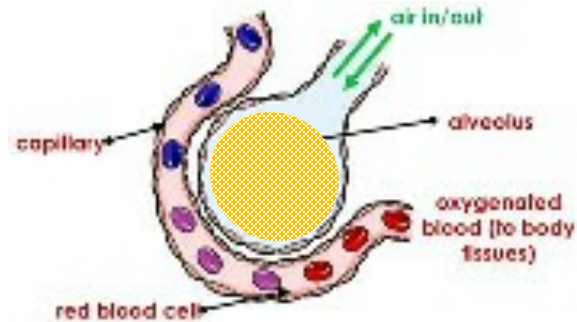


inspiration Expiration



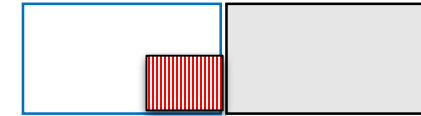
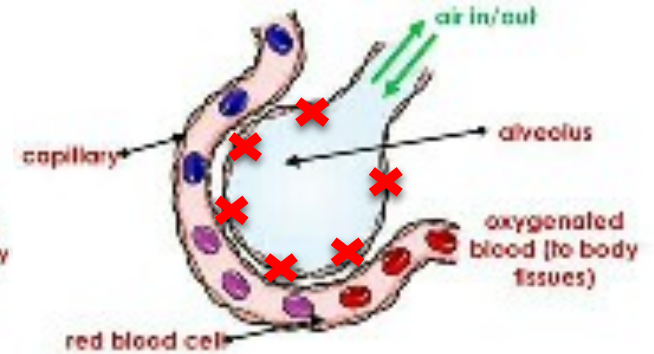
Chronic bronchitis
Bronchiectasis

Whole inspiratory



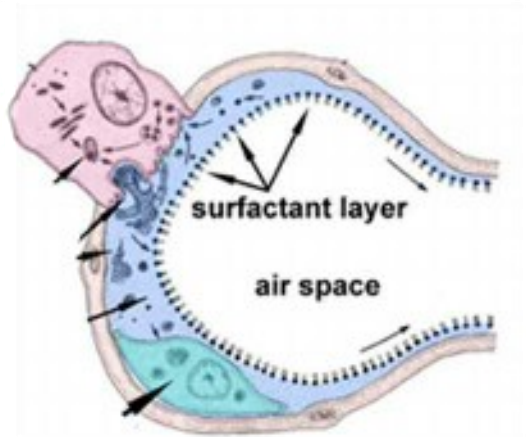
Accumulated secretions e.g.
Bronchopneumonia and
Non resolving pneumonia
(Change with cough)

Late inspiratory

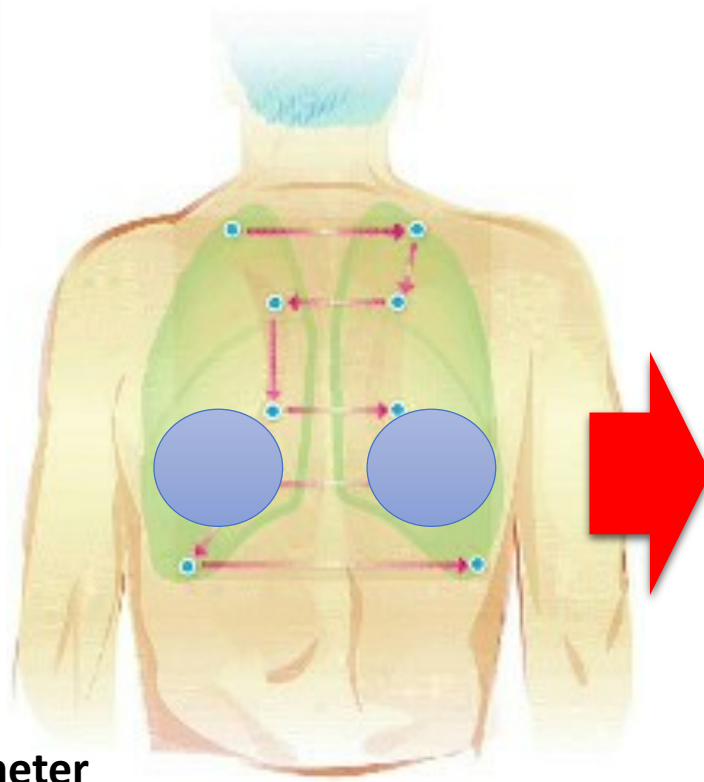


1- CHF
2- IPF
3- Allergic alveolitis
4- Early pneumonia
(NOT affected by cough)

CHF

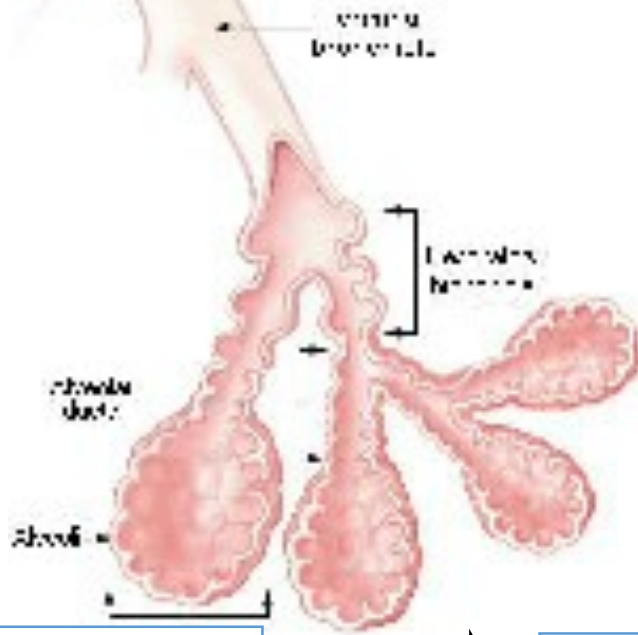


More collapse of the
alveoli at lung base
1-Smaller airway diameter
2-Higher IPP



**Basal
crepitations**

Crackles



Fine

IPF

Medium

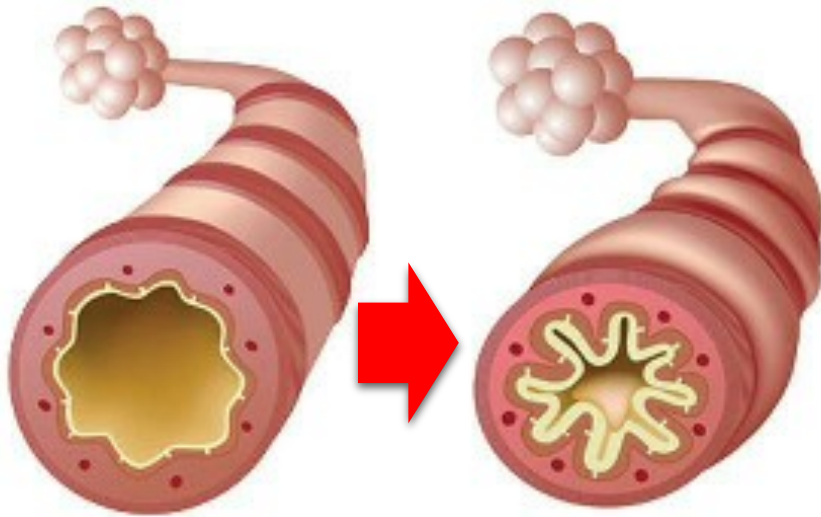
LSHF

Course

Bronchiectasis

② Wheezes (Rhonchi)

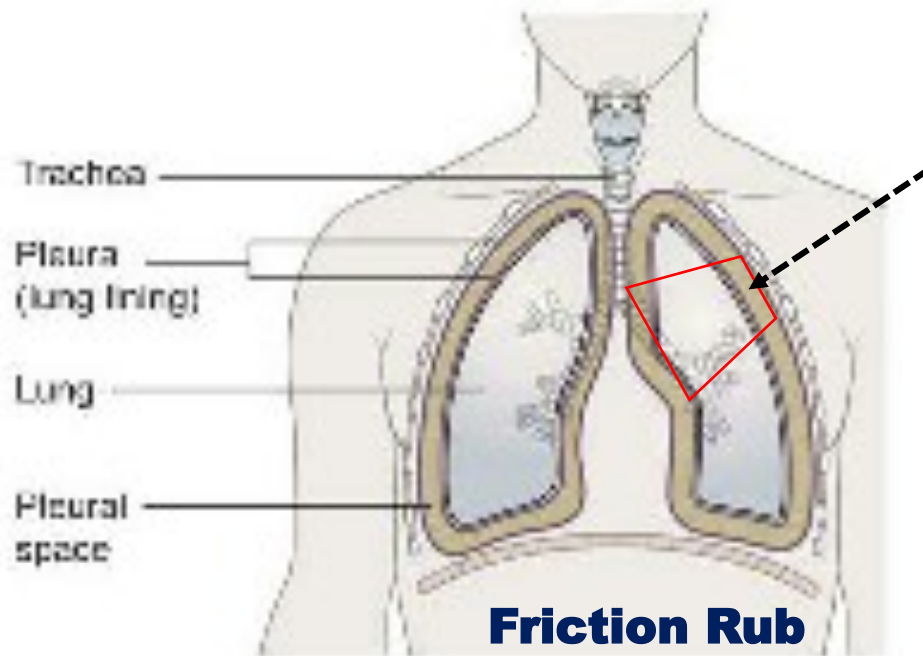
Continuous sounds



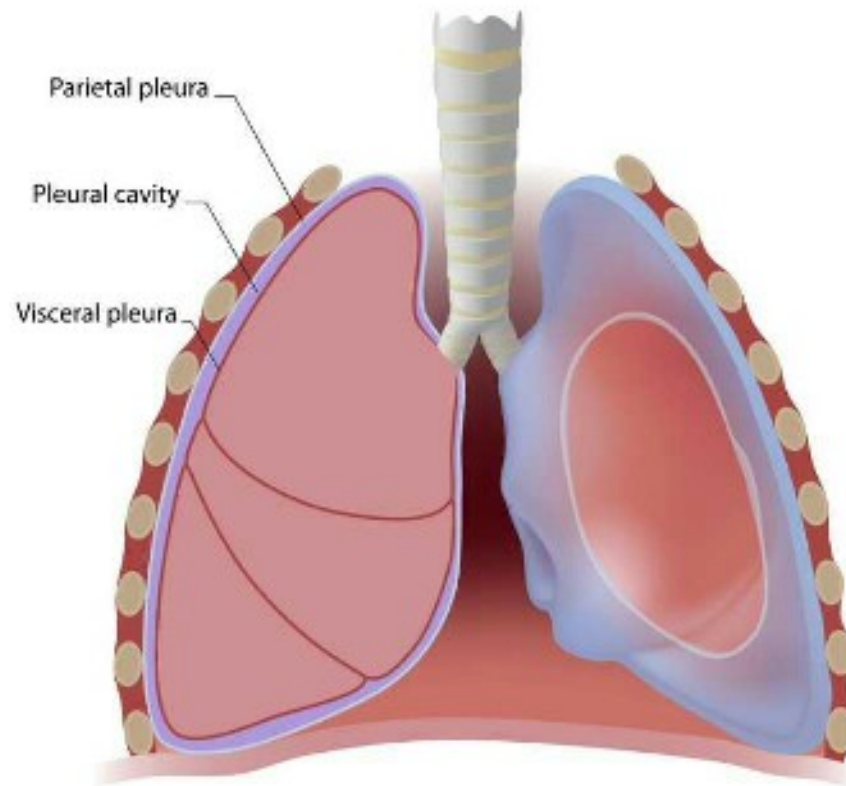
- ① **Bronchial asthma and COPD**
(Mainly Expiratory- Diffuse)
- ② **Bronchitis**
(Both inspiratory and expiratory)
- ③ **Bronchogenic carcinoma**
(Localized)

③ Pleural Rub

In both inspiration and expiration
NOT affected by cough (Unlike crackles and Rhonchi)



Introduction (Part II)



Dr. Tarek Abdelhamid M.D.

تحذير هام

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① Inspection

② Palpation

Trachea

Mobility

TVF

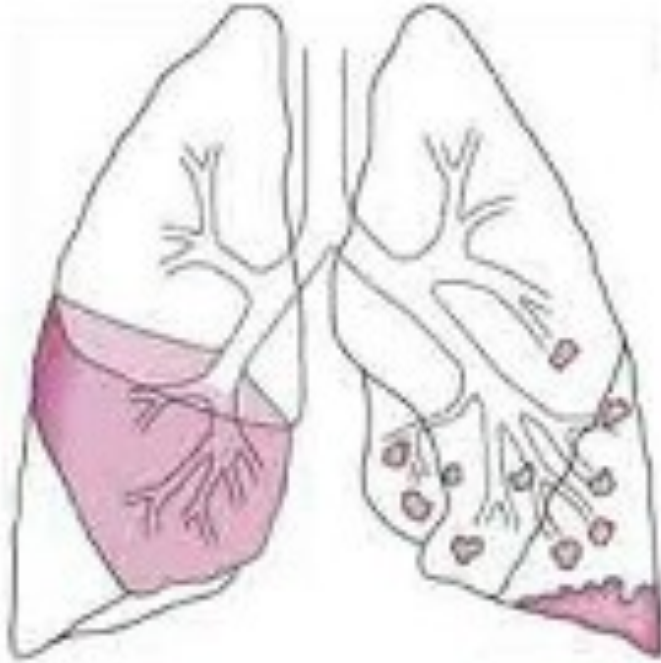
③ Percussion

④ Auscultation

Normal Sounds

Added Sounds

Lung Consolidation



① Inspection: Normal

② Palpation:

Trachea: Central

Mobility: Limited

TVF: ↑ ↑ ↑

③ Percussion: Dullness

④ Auscultation

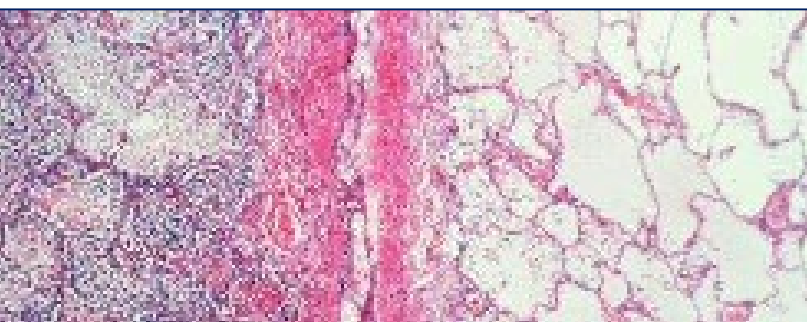
Normal Sounds

Bronchial breathing

Added Sounds

Crackles (Inspiratory crepitations)

e.g. Lobar pneumonia

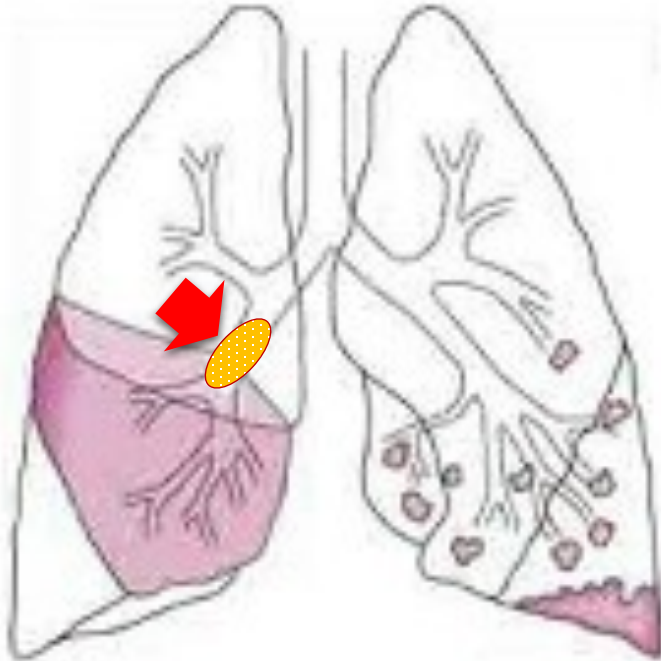


Consolidation



Normal

Lung Consolidation



① Inspection: Normal

② Palpation:

Trachea: Central

Mobility: Limited

TVF: ↑ ↑ ↑

③ Percussion: Dullness

④ Auscultation

Normal Sounds

Bronchial breathing

Added Sounds

Crackles (Inspiratory crepitations)

If secretions in pneumonia
blocked the bronchus



Absent breath sounds

Cough



Appear

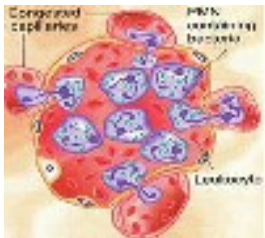
Lung Consolidation



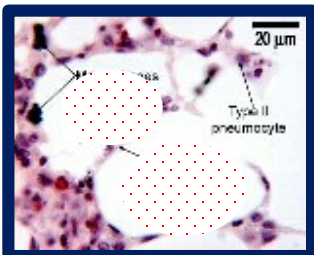
Congestion



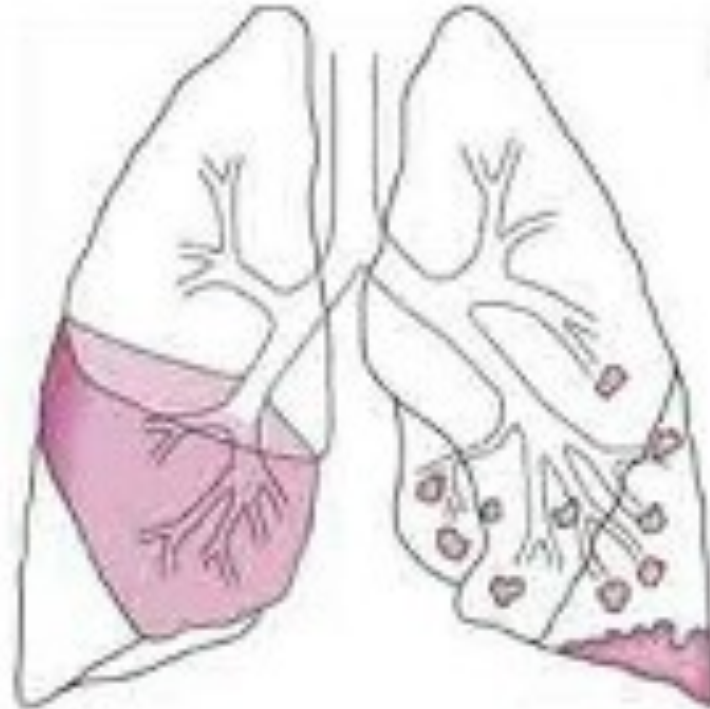
Red hepatisation



Grey hepatisation



Resolution



Crackles
(Inspiratory
crepitations)

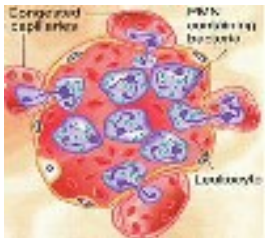
Lung Consolidation



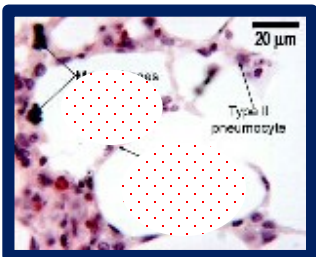
Congestion



Red hepatisation



Grey hepatisation



Resolution



Crackles
(Inspiratory
crepitations)



Lung Fibrosis



① **Inspection: ?! Retraction**

② **Palpation:**

Trachea: Shifted toward the affected side

Mobility: Limited

TVF: 2 possibilities

---- if irregular fibrosis

+++ if regular band of fibrosis

③ **Percussion: Dullness**

④ **Auscultation**

Normal Sounds

Diminished vesicular or Bronchial breathing

Added Sounds

Crackles (Crepitations)

Emphysema



① **Inspection: Barrel Shaped Chest**

② **Palpation**

Trachea: Central

Mobility: Limited

TVF: Decreased

③ **Percussion: Hyperresonance**

④ **Auscultation:**

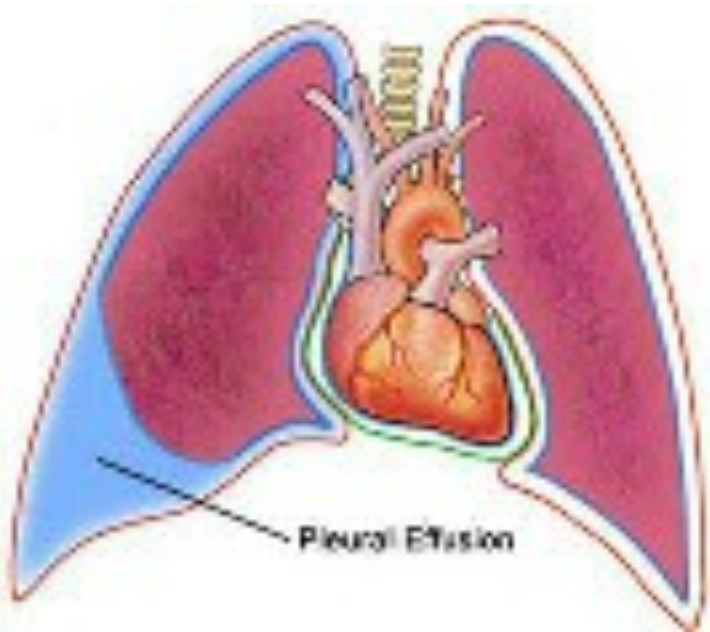
Normal Sounds

Vesicular breathing with prolonged expiration

Added Sounds

Expiratory Wheezes

Pleural effusion



① **Inspection:** ?! **Bulge**

② **Palpation**

Trachea: Shifted to the other side

Mobility: Limited

TVF: Decreased but **Aegophony** may be heard above it

③ **Percussion** **Stony dullness** rising to the axilla

④ **Auscultation**

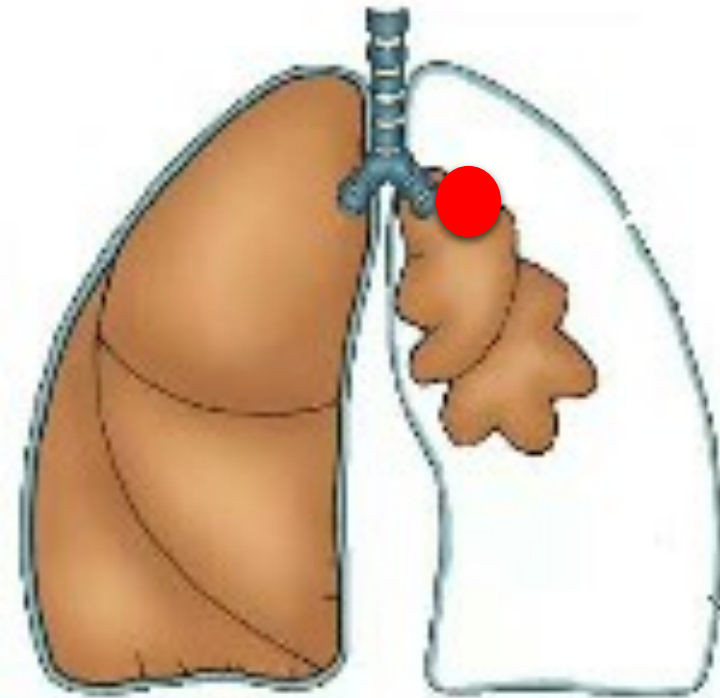
Normal Sounds

Diminished vesicular sounds with **bronchial breathing** above it due to collapse of the alveoli

Added Sounds

None

Lung collapse



① **Inspection: ?! Retraction**

② **Palpation**

Trachea: Shifted to the side of the lesion

Mobility: Limited

TVF: Absent

③ **Percussion: Dullness**

④ **Auscultation**

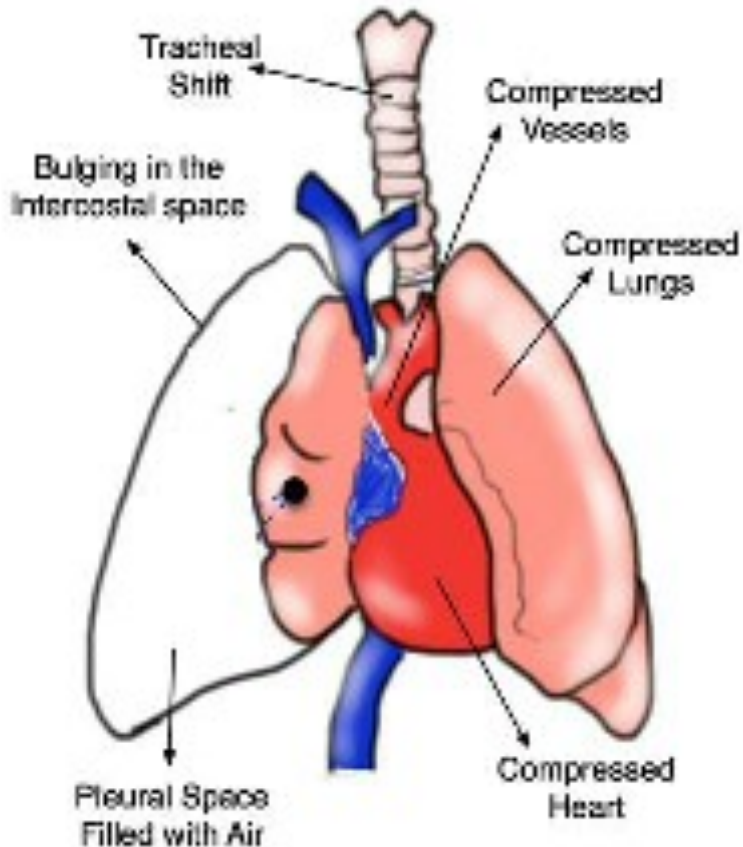
Normal Sounds

Absent except in ULLC where bronchial sounds can be transmitted directly from trachea.

Added Sounds

None

Pneumothorax



① Inspection: **?! Bulge**

② Palpation

Trachea: Shifted to the opposite side of lesion

Mobility: Limited

TVF: 

③ Percussion: **Tympanic Resonance**

④ Auscultation:

Normal Sounds

Diminished vesicular breathing but bronchial if lung collapse occurred

Added Sounds

None

Bronchial asthma



① Inspection: Barrel Shaped Chest

② Palpation

Trachea: Central

Mobility: Limited

TVF: Decreased

③ Percussion: Hyperresonance

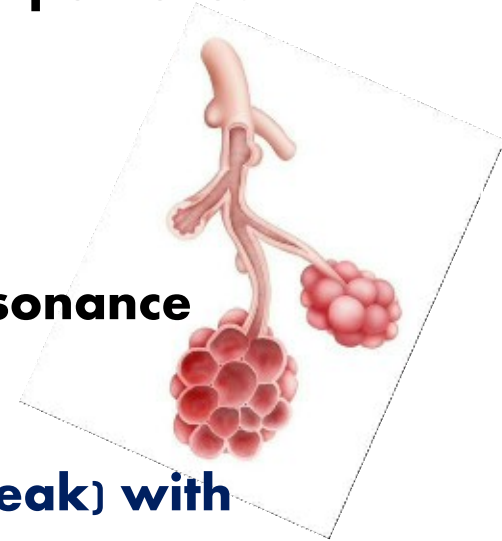
④ Auscultation:

Normal Sounds

Vesicular breathing (Weak) with prolonged expiration

Added Sounds

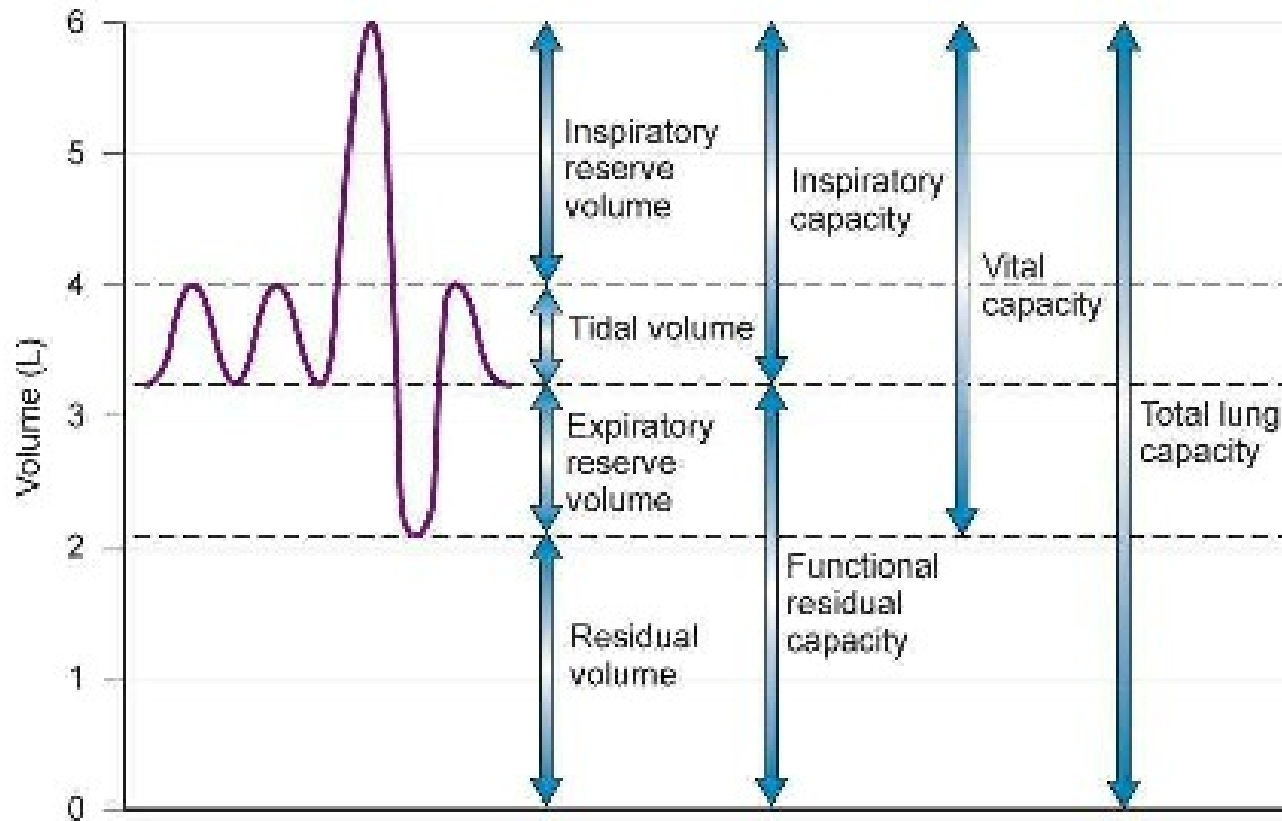
Wheezes (Mainly Expiratory)



Note 1: If severe ...Wheezes become also Inspiratory

Note 2: If very severe...May lead to Silent Chest

Respiratory function tests



Dr. Tarek Abdelhamid M.D.

تحذير هام

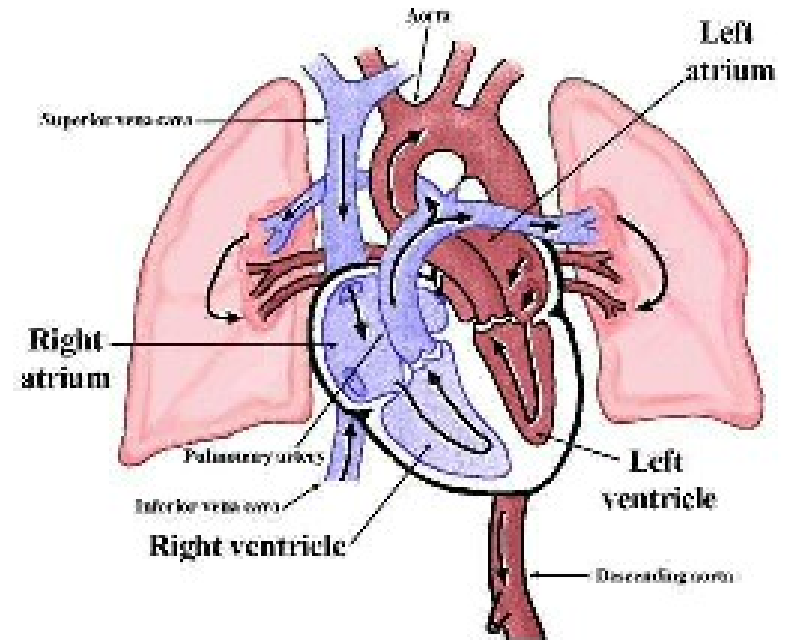
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Respiratory function tests

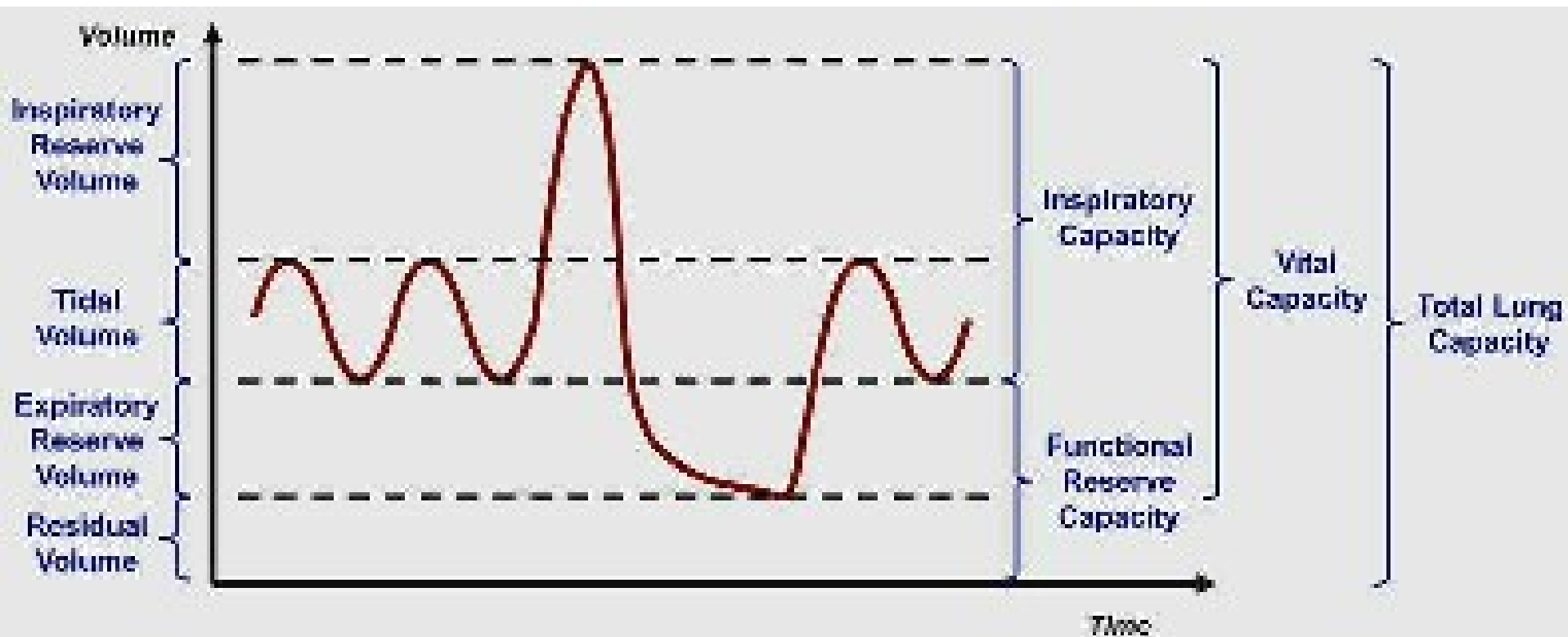
- 1 Lung volumes
- 2 Air flow
- 3 Ratios
- 4 Flow volume curves
- 5 Arterial Blood Gases
- 6 Pulse Oximeter
- 7 Diffusing Lung capacity (DLCO)



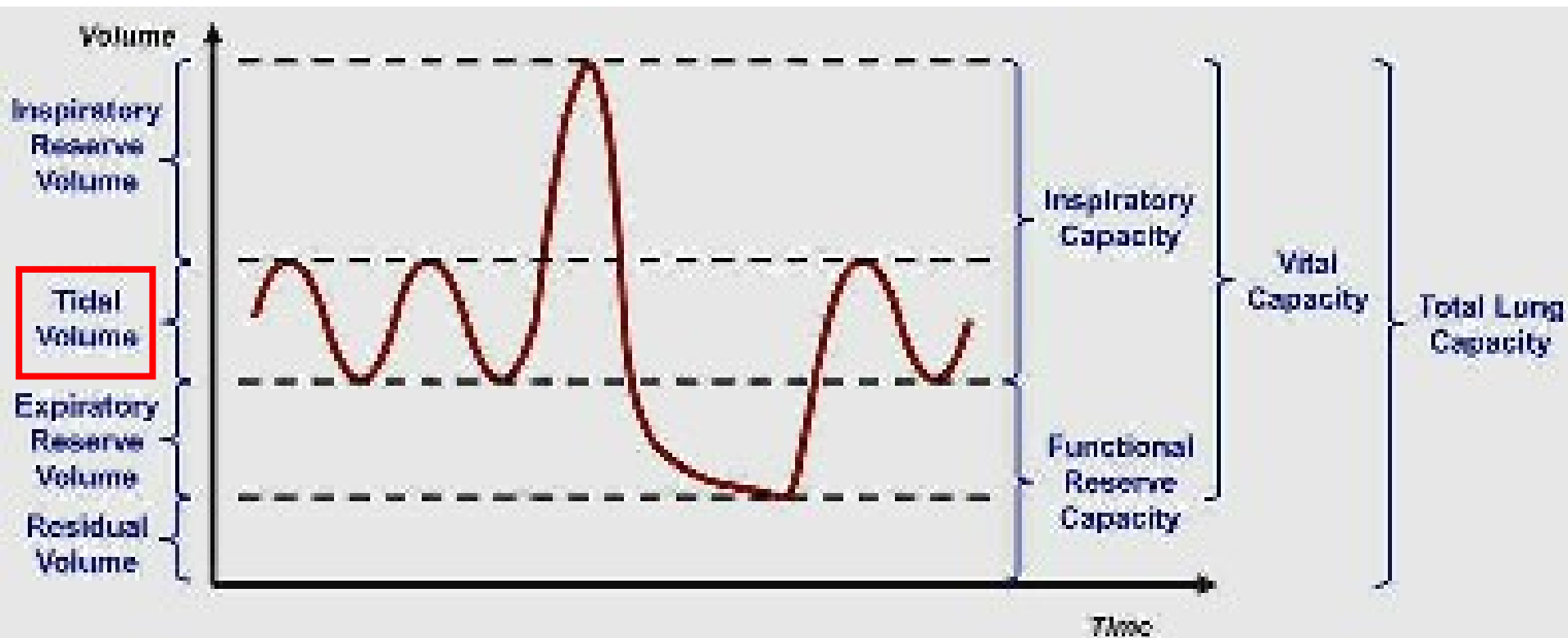
Spirometer



Lung volumes

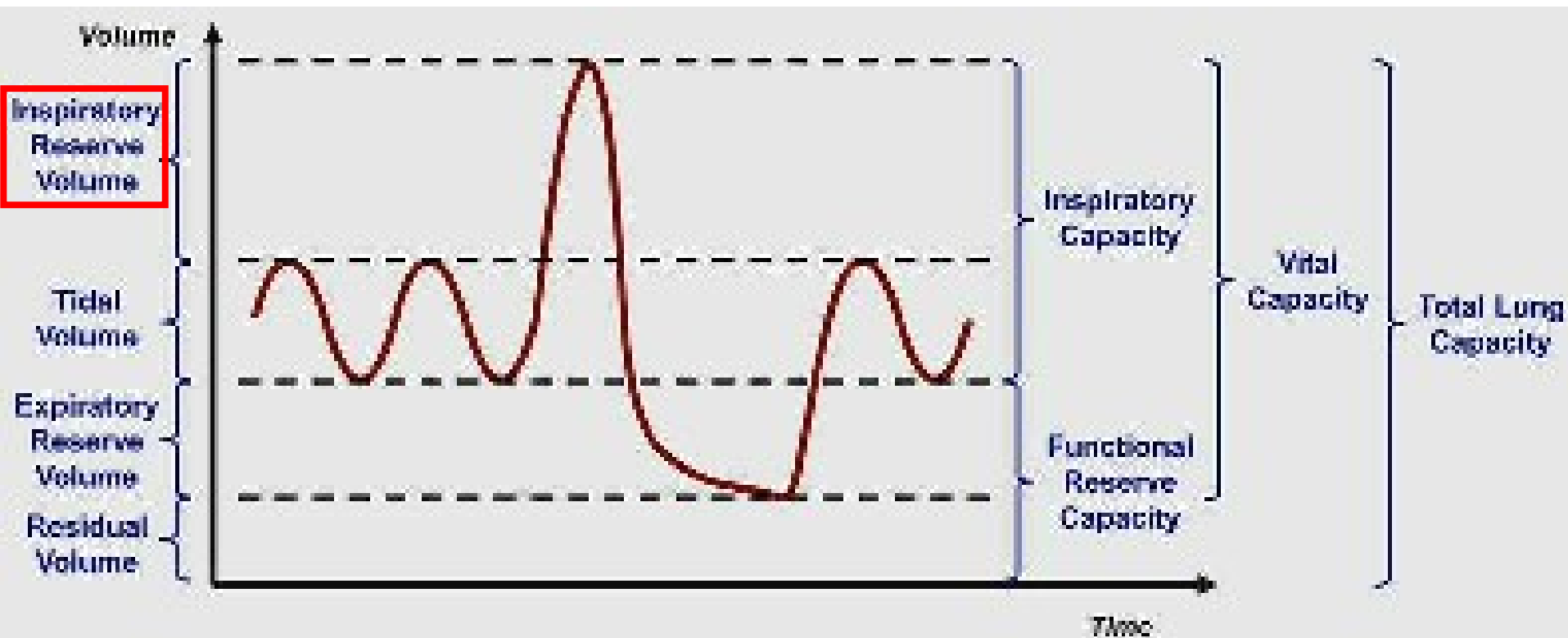


Lung volumes



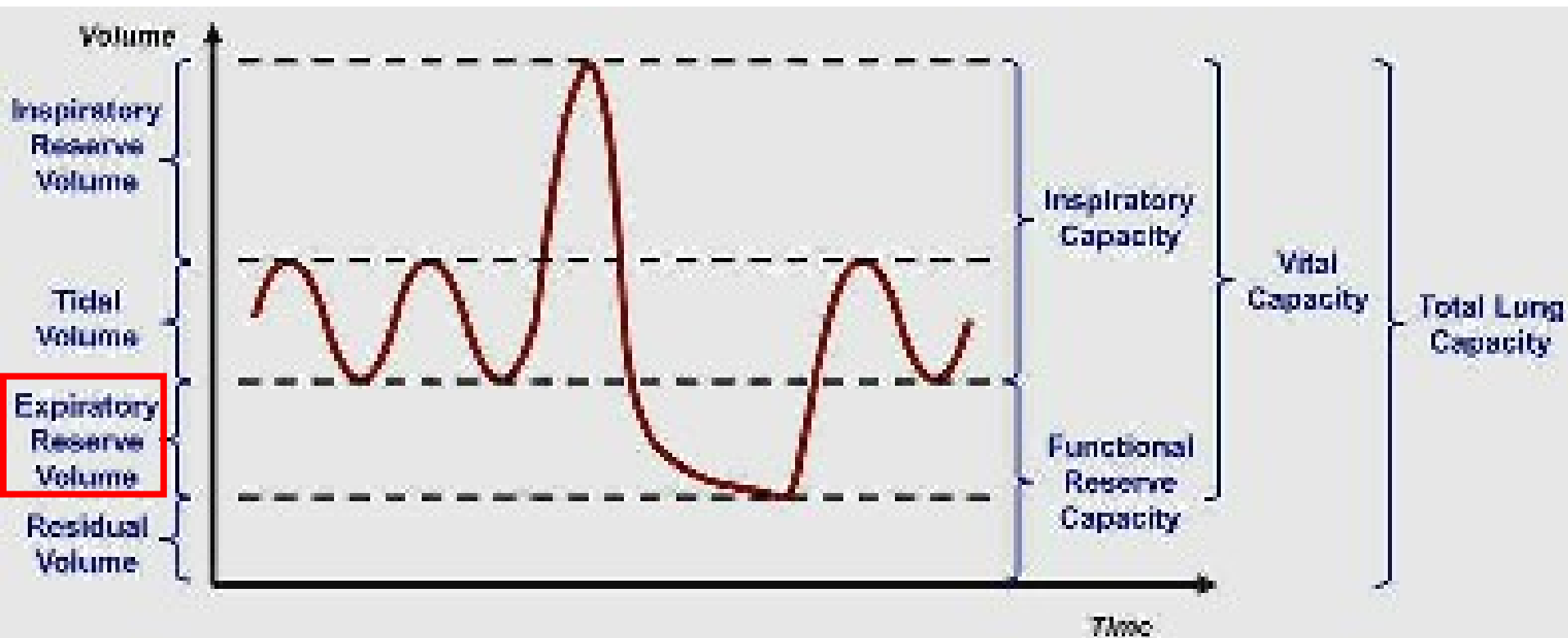
Tidal volume (TV): The volume of air moved into or out of the lungs during normal respiration

Lung volumes



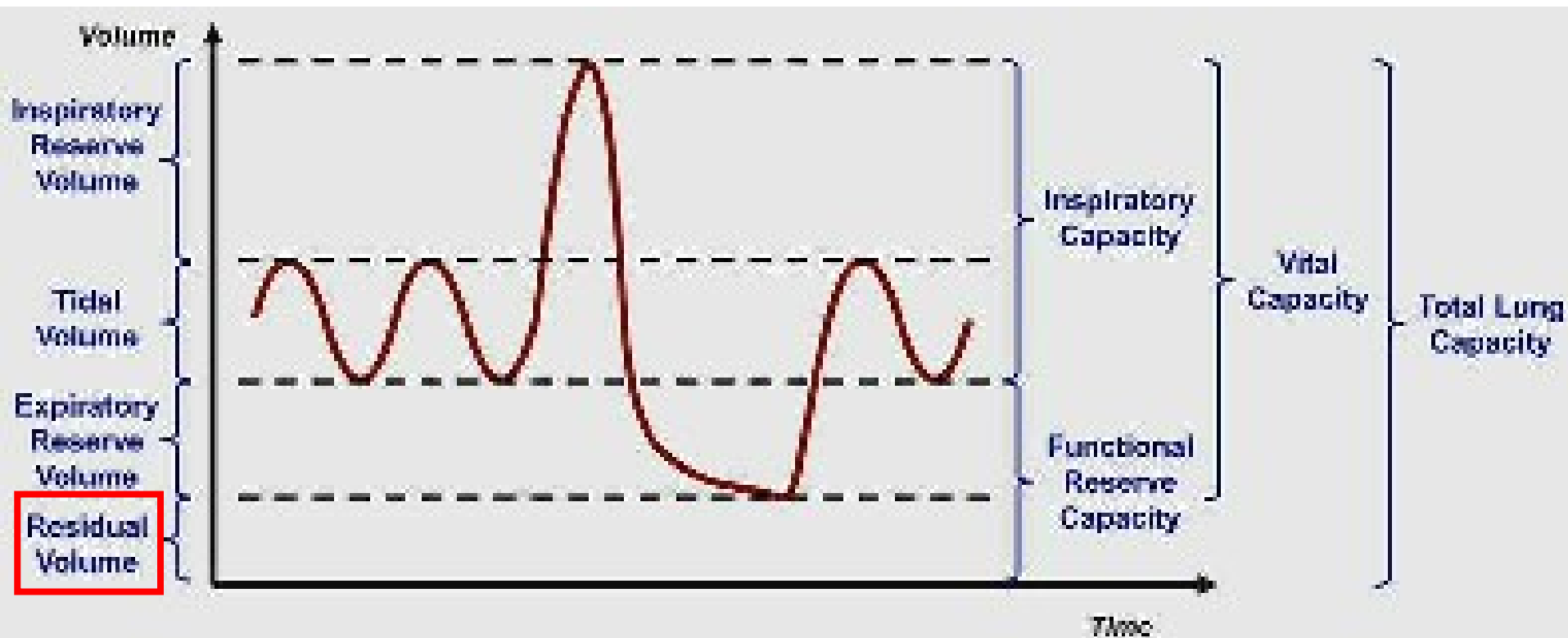
Inspiratory reserve volume (IRV): the maximal volume that can be inhaled from the end-inspiratory level

Lung volumes



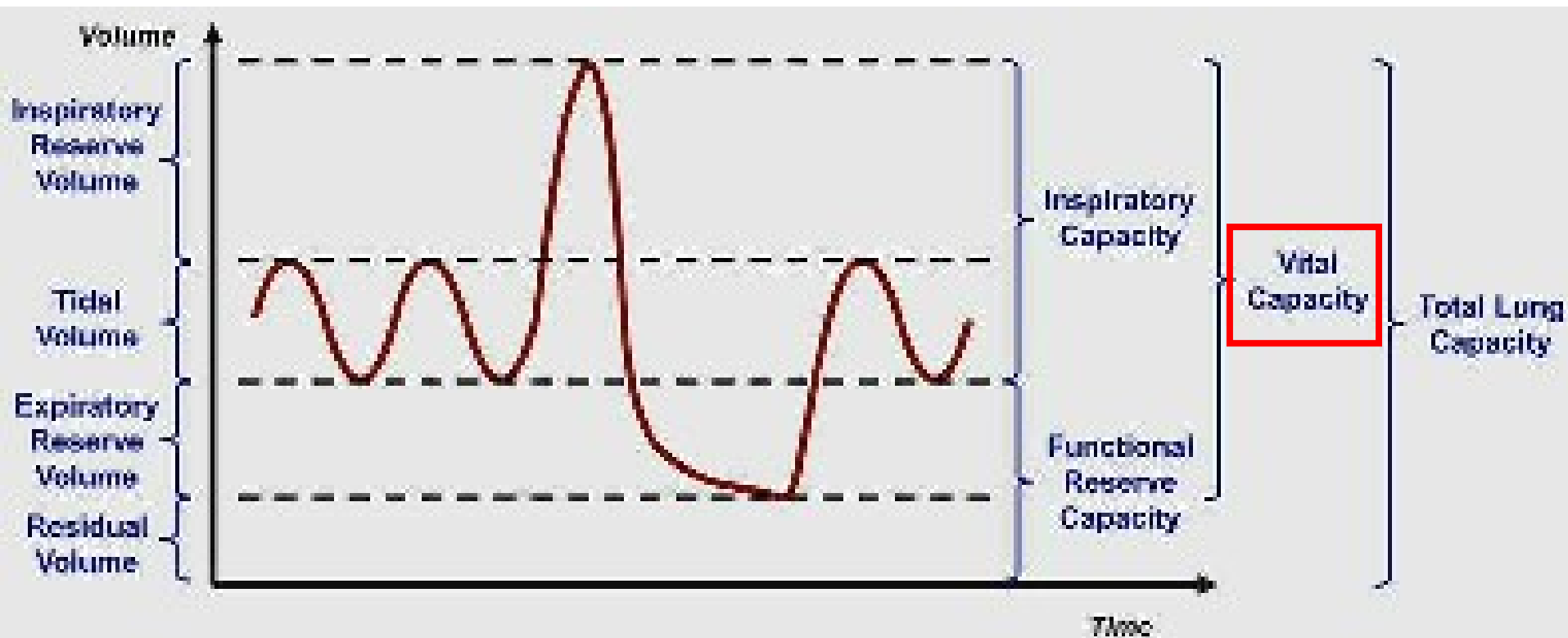
Expiratory reserve volume (ERV): the difference between the amount of air in the lungs after a normal expiration (FRC) and the amount after you expire with force (RV).

Lung volumes



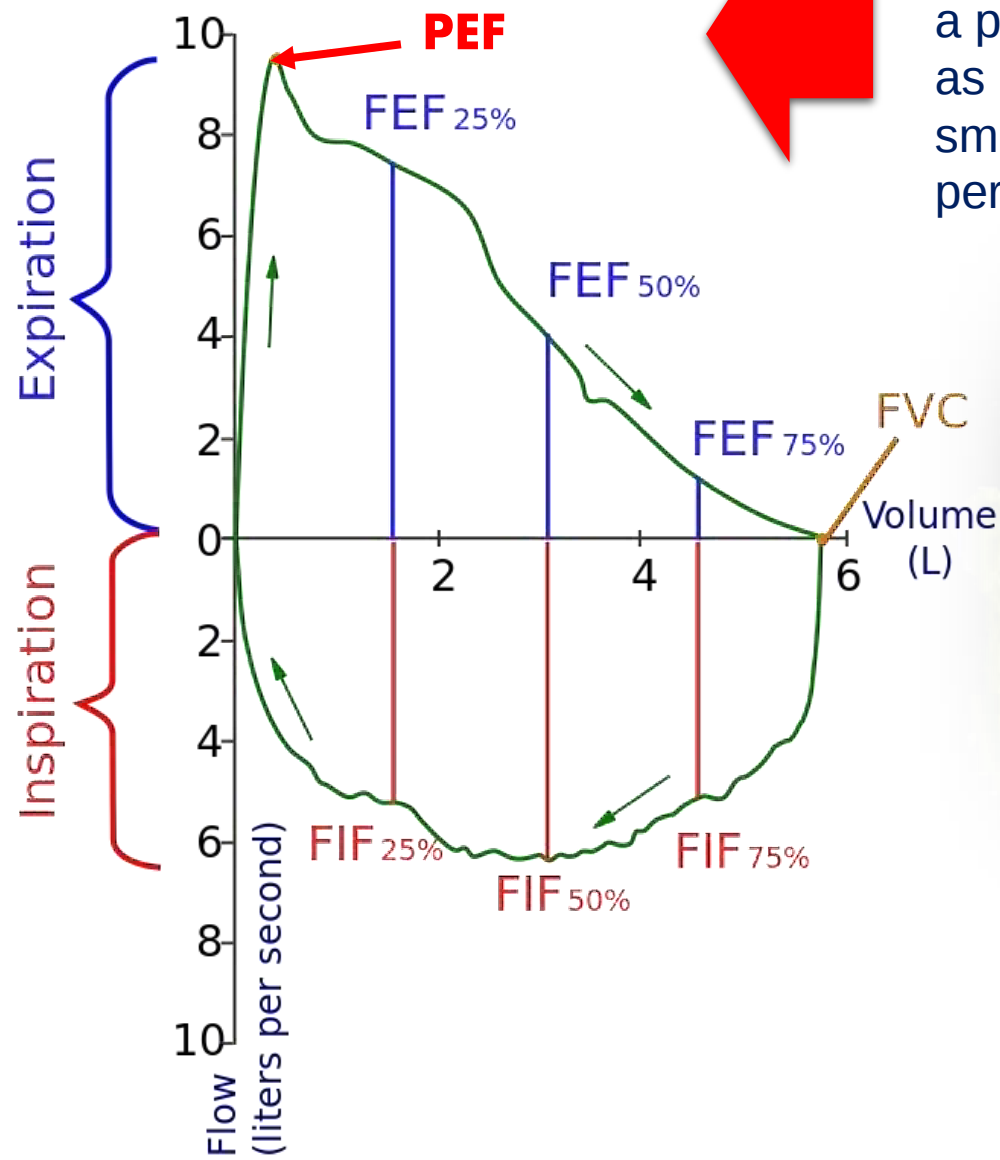
Residual volume (RV): This measures the amount of air in the lungs after full expiration.

Lung volumes

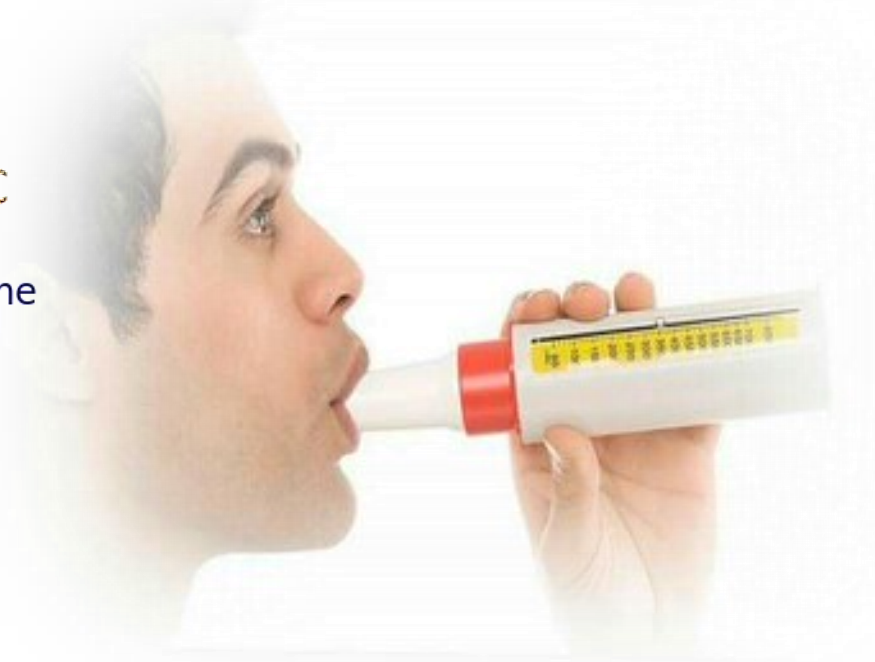


Vital Capacity (VC) or Forced vital capacity (FVC) This measures the amount of air you can expire with force after maximal inspiration.

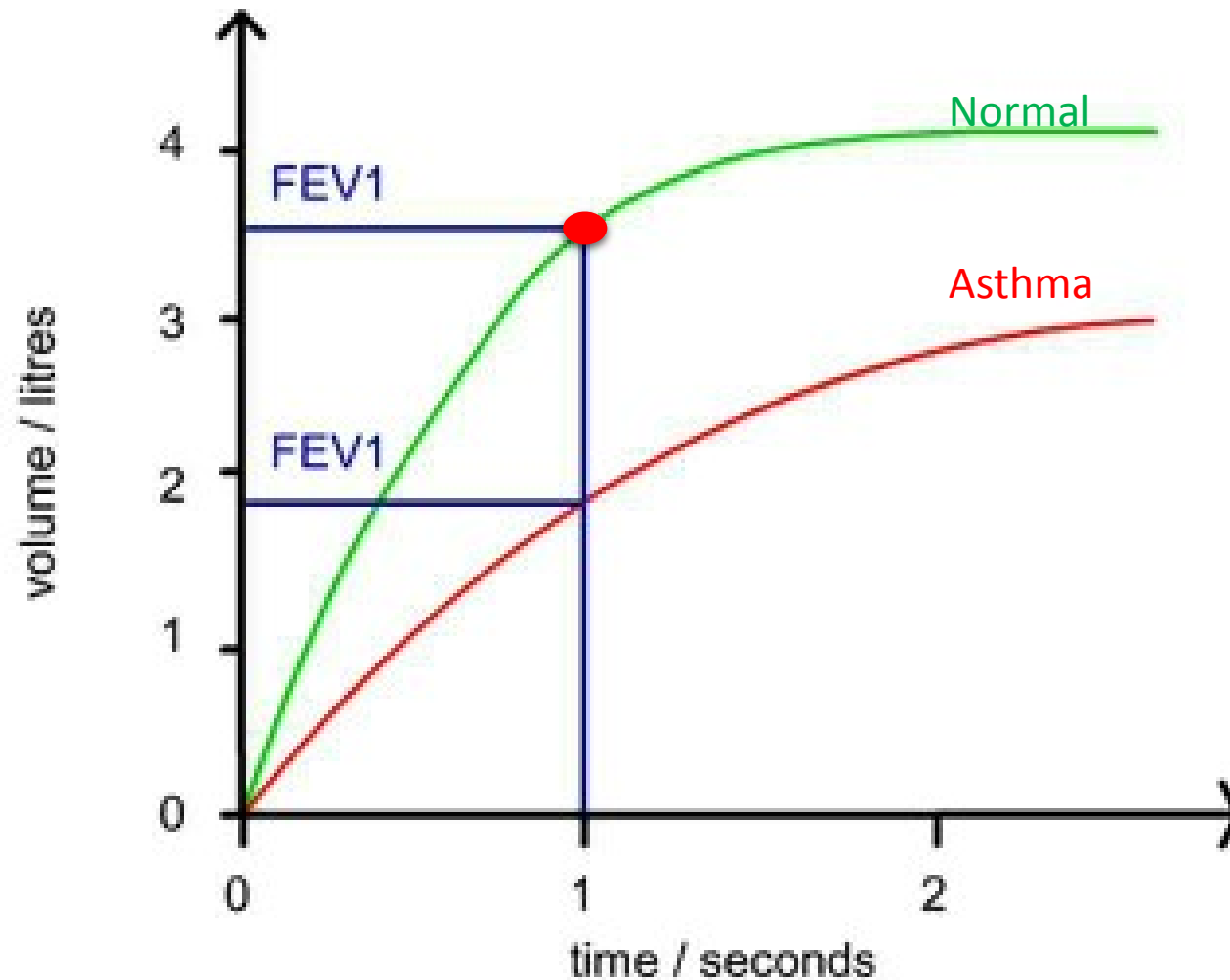
Air flow



The **peak expiratory flow** (PEF), also called **peak expiratory flow rate** (PEFR) is a person's maximum **speed** of expiration, as measured with a **peak flow** meter, a small, hand-held device used to monitor a person's ability to breathe out air.



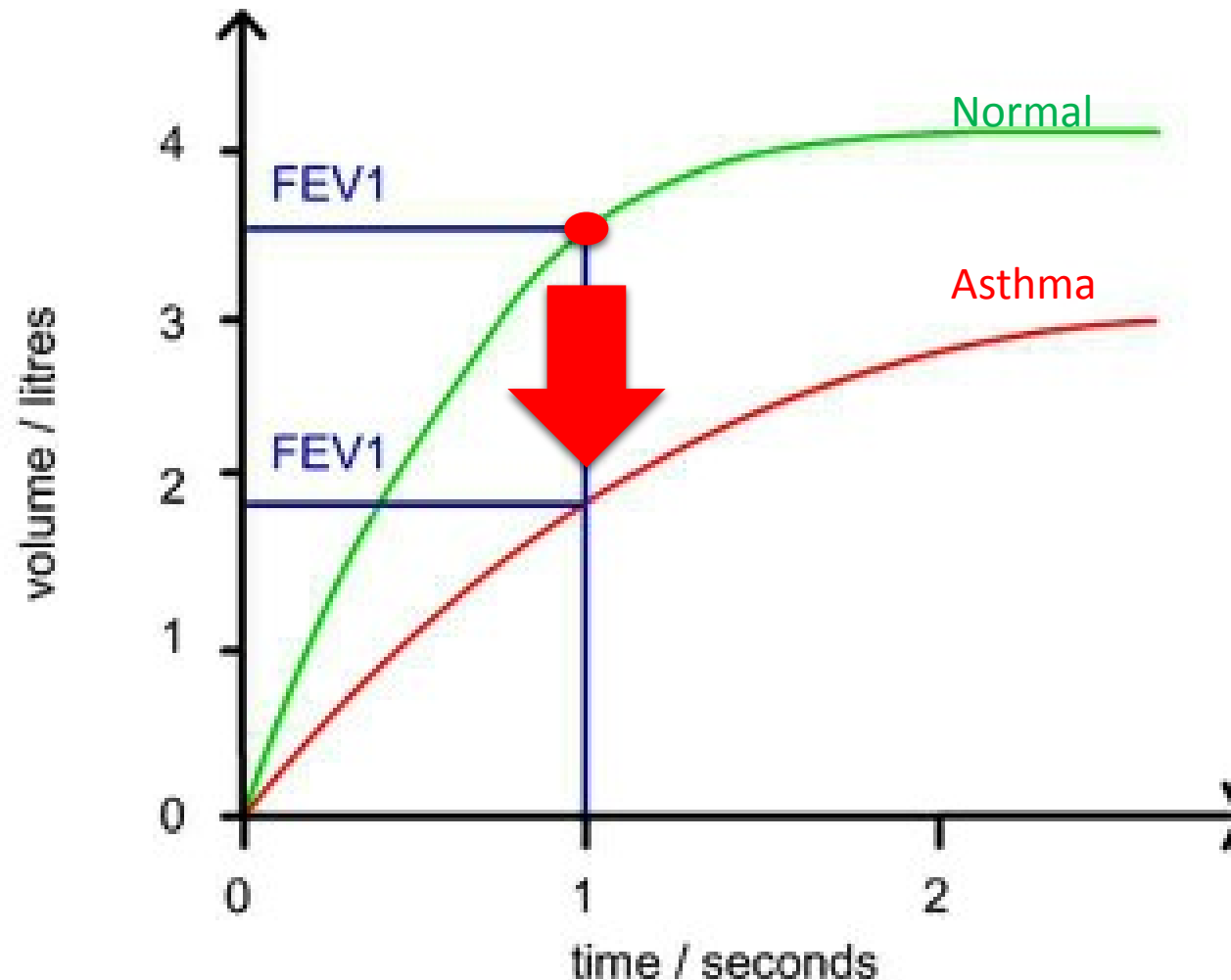
Air flow



Forced expiratory volume (FEV1)

FEV1 is the maximal amount of air you can forcefully exhale in one second.

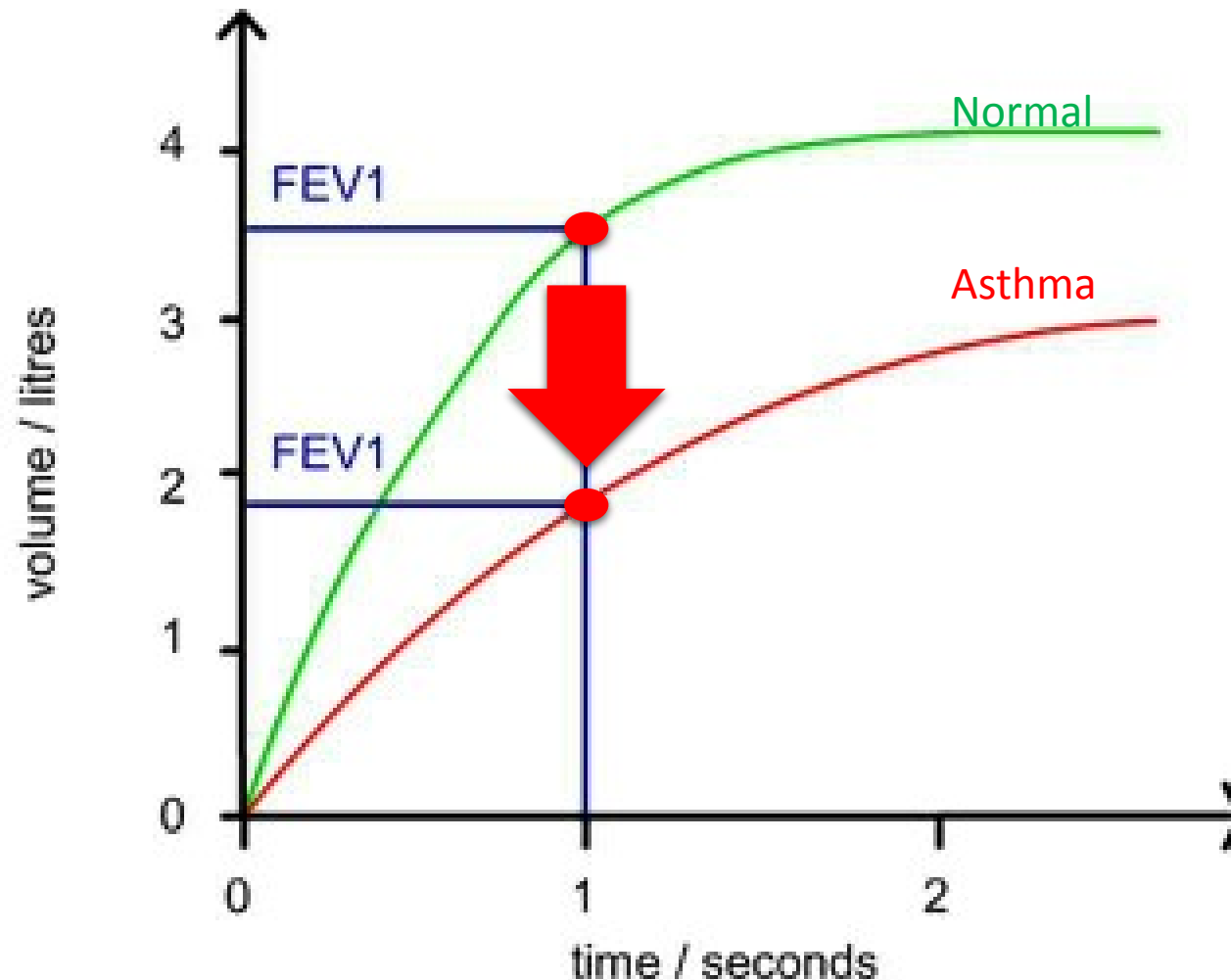
Air flow



Forced expiratory volume (FEV1)

FEV1 is the maximal amount of air you can forcefully exhale in one second.

Air flow



Forced expiratory volume (FEV1)

FEV1 is the maximal amount of air you can forcefully exhale in one second.

Ratios

FEV₁/FVC

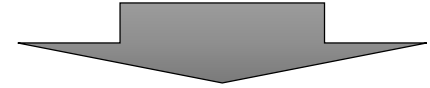
75%

**Obstructive lung
diseases**



FEV₁/FVC

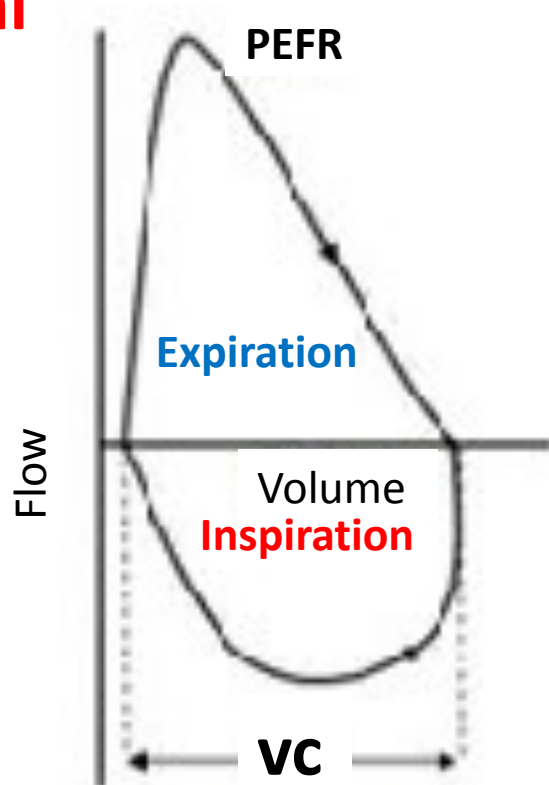
**Restrictive lung
disease**



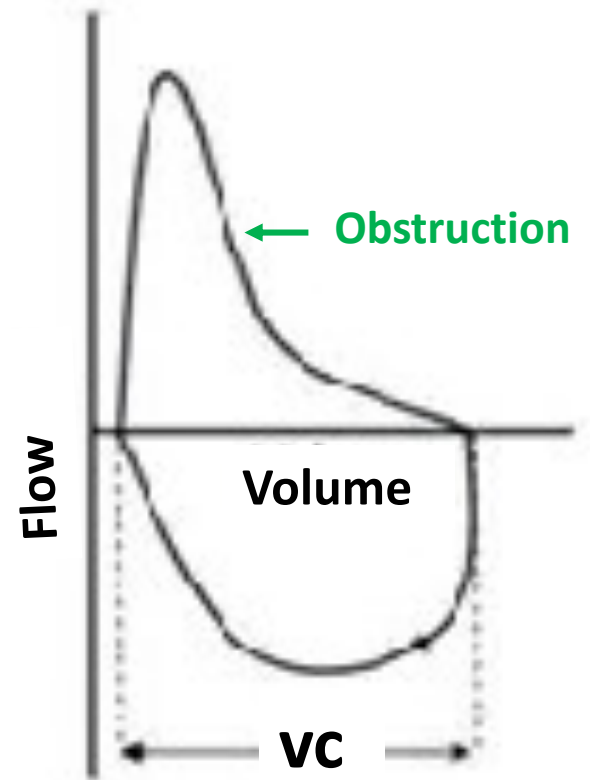
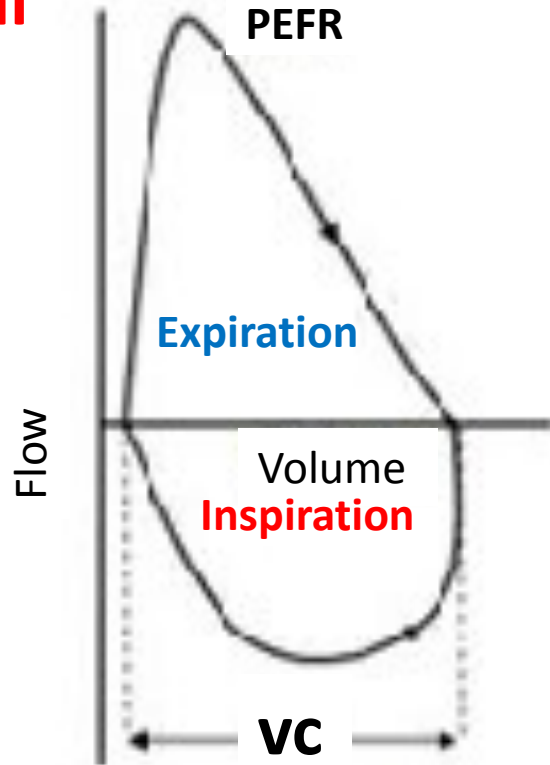
FEV₁/FVC

Flow volume curves

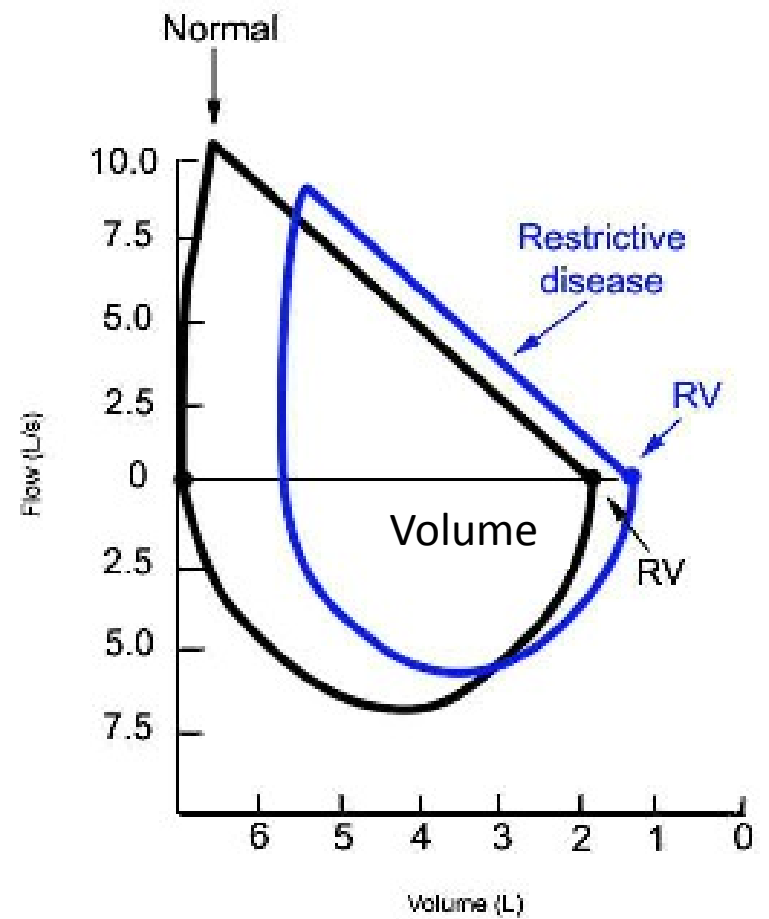
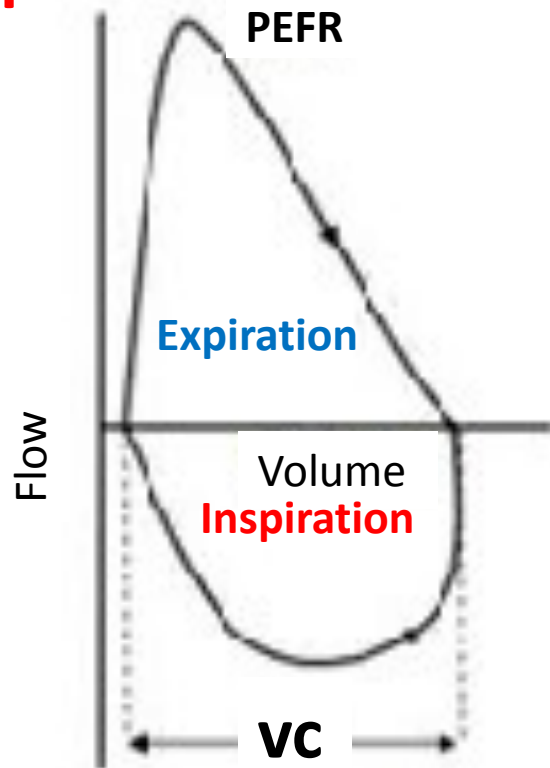
Normal



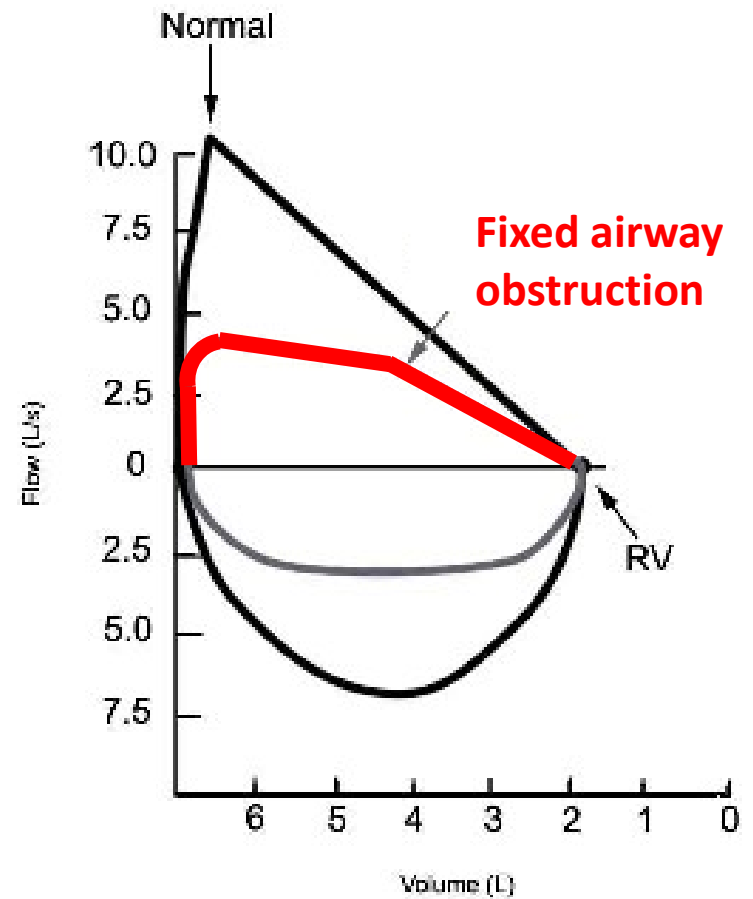
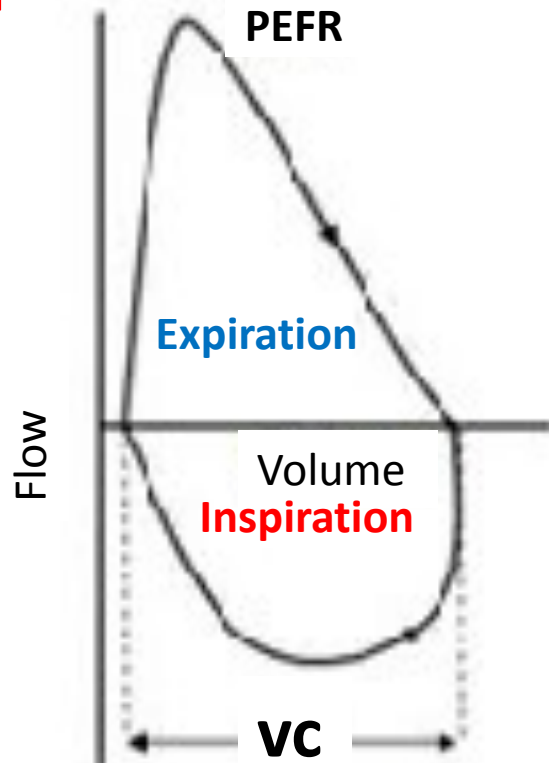
Normal



Normal



Normal



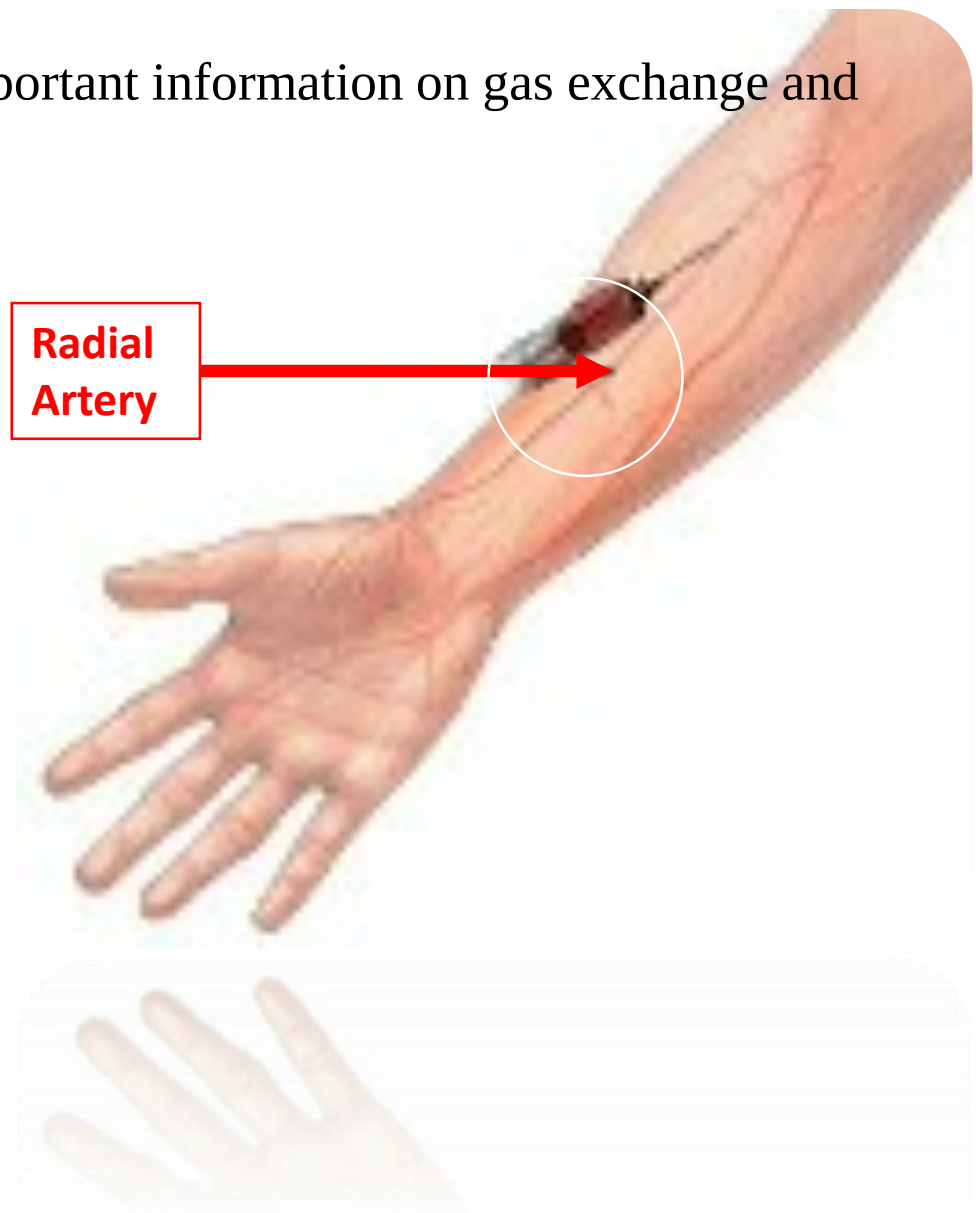
Arterial Blood Gases

Arterial blood gas sampling provides important information on gas exchange and oxygen delivery to the tissues

Bronchial asthma

↓ O₂

CO₂



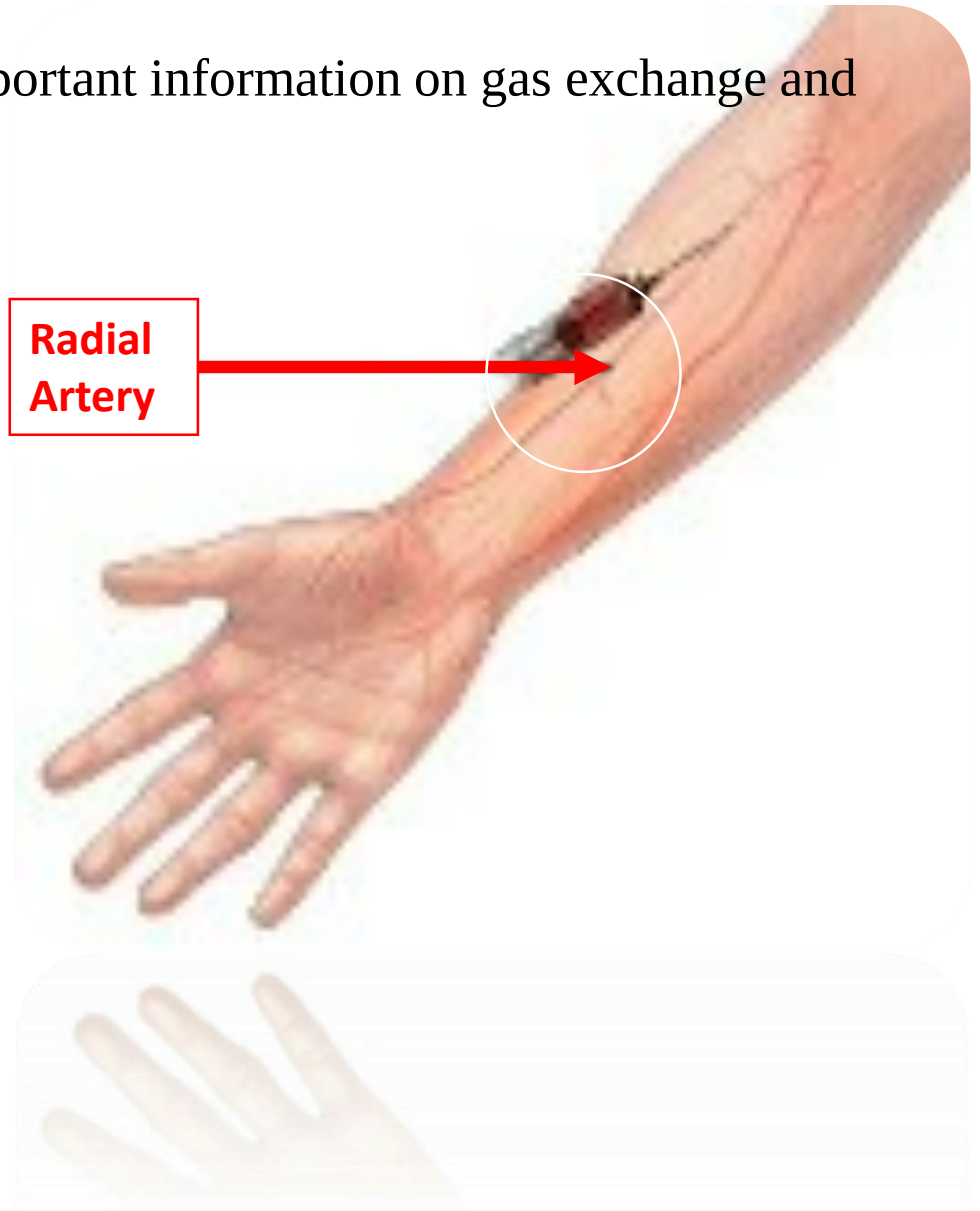
Arterial Blood Gases

Arterial blood gas sampling provides important information on gas exchange and oxygen delivery to the tissues

Bronchial asthma

↓ O₂ ↓ CO₂

Radial
Artery



Arterial Blood Gases

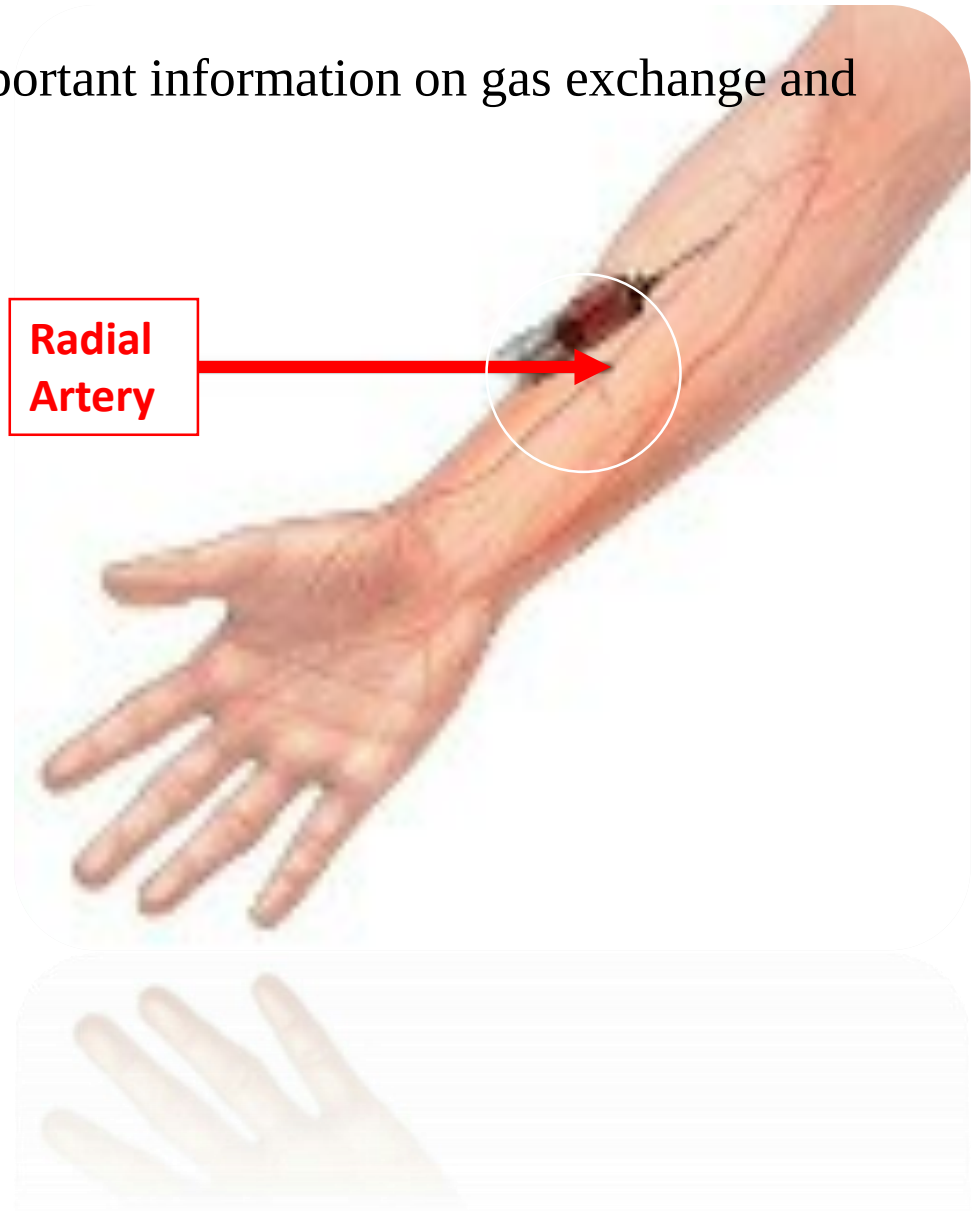
Arterial blood gas sampling provides important information on gas exchange and oxygen delivery to the tissues

Bronchial asthma

↓ O₂ ↓ CO₂

↓ O₂ ↑ CO₂
= Impending respiratory failure

Radial
Artery



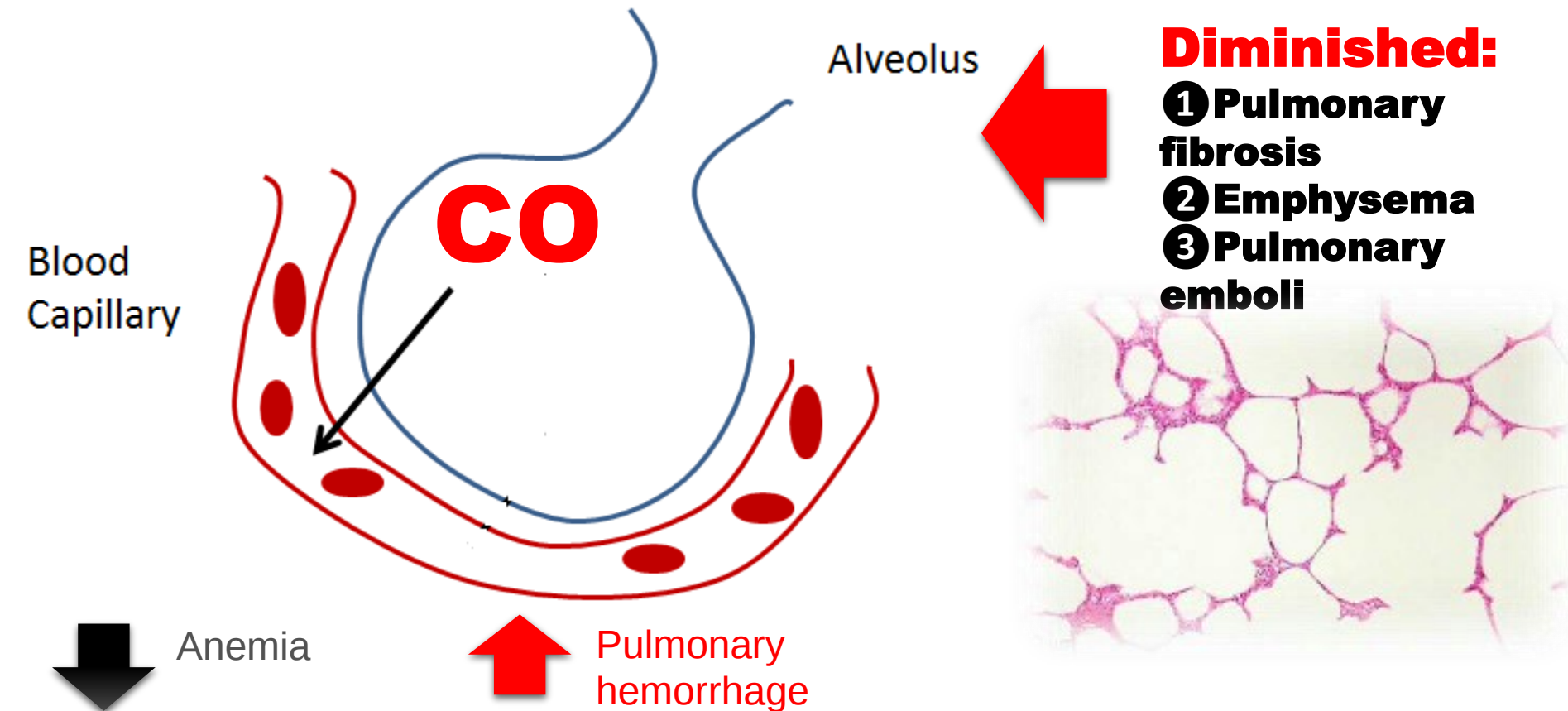
Pulse Oximeter

Pulse oximetry is a procedure used to measure the **oxygen level** (or oxygen saturation) in the blood. It is considered to be a noninvasive, painless, general indicator of oxygen delivery to the peripheral tissues (such as the finger, earlobe, or nose).



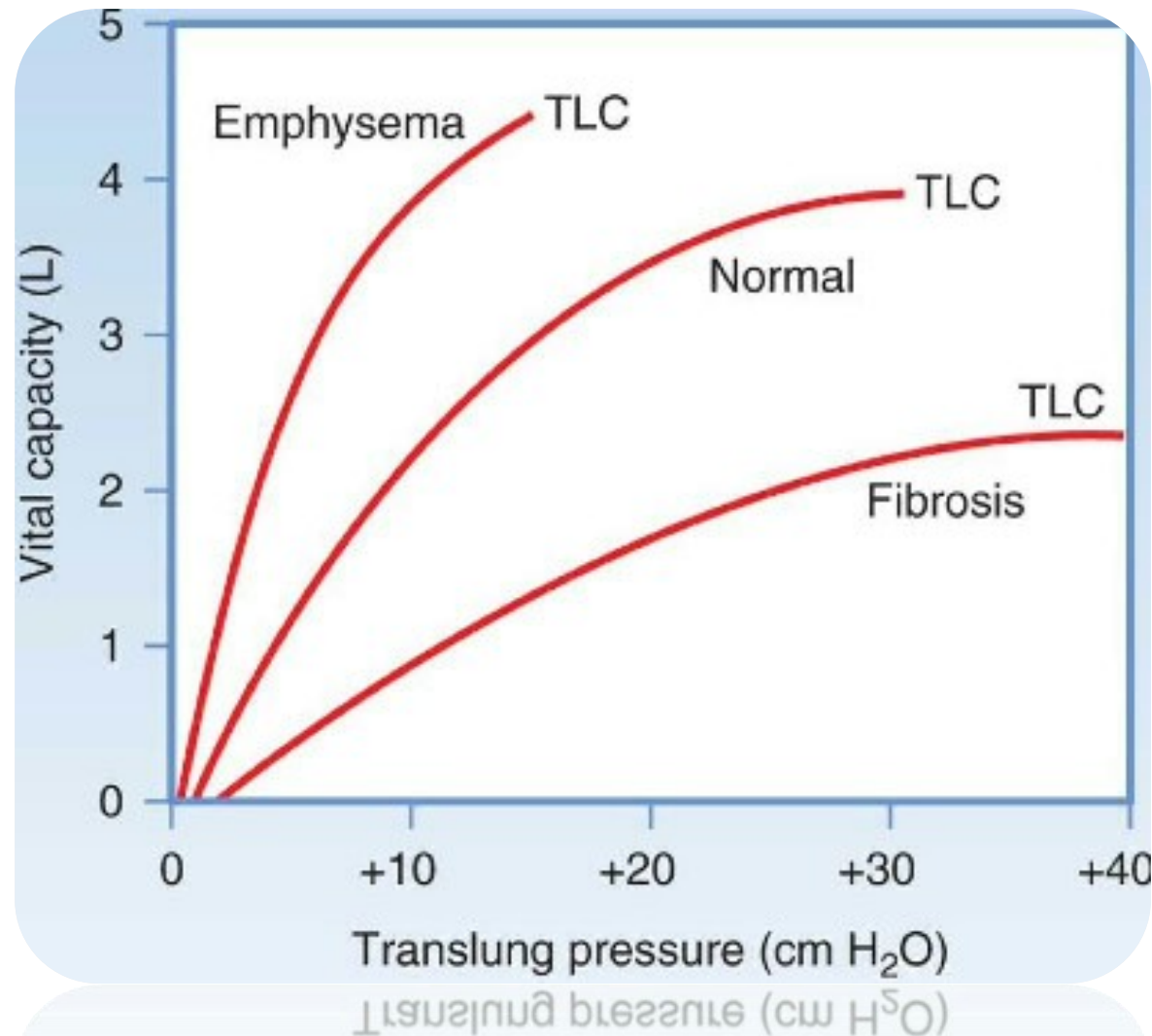
Diffusing capacity (DLCO)

Diffusing capacity (or DLCO) also known as *transfer factor* is the carbon monoxide uptake from a single inspiration in a standard time (usually 10 seconds). This will pick up diffusion impairments, for instance in pulmonary fibrosis.



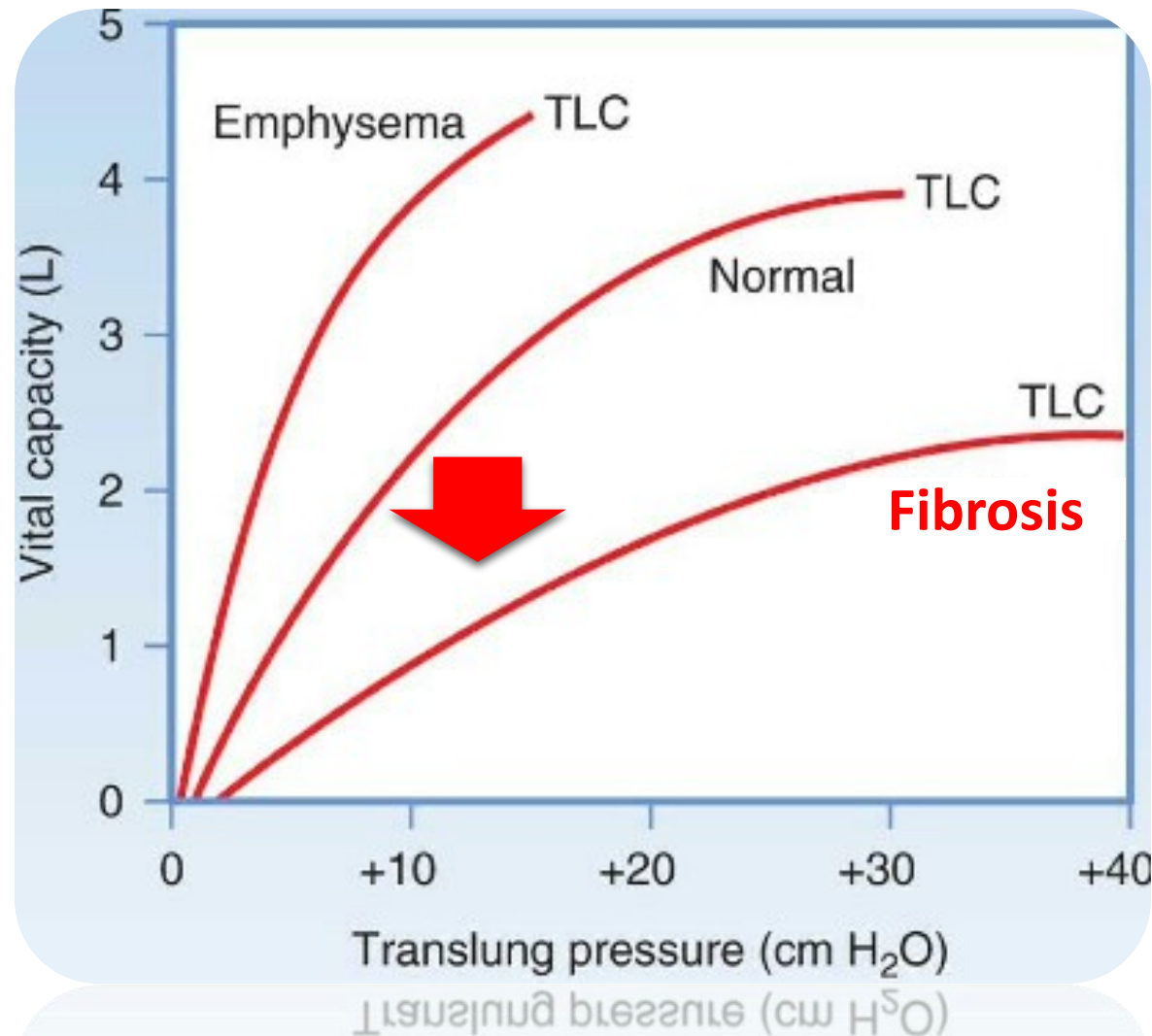
Lung Compliance

Pulmonary **compliance** (or **lung compliance**) is a measure of the **lung's** ability to stretch and expand. Static **lung compliance** is the change in volume for any given applied pressure.



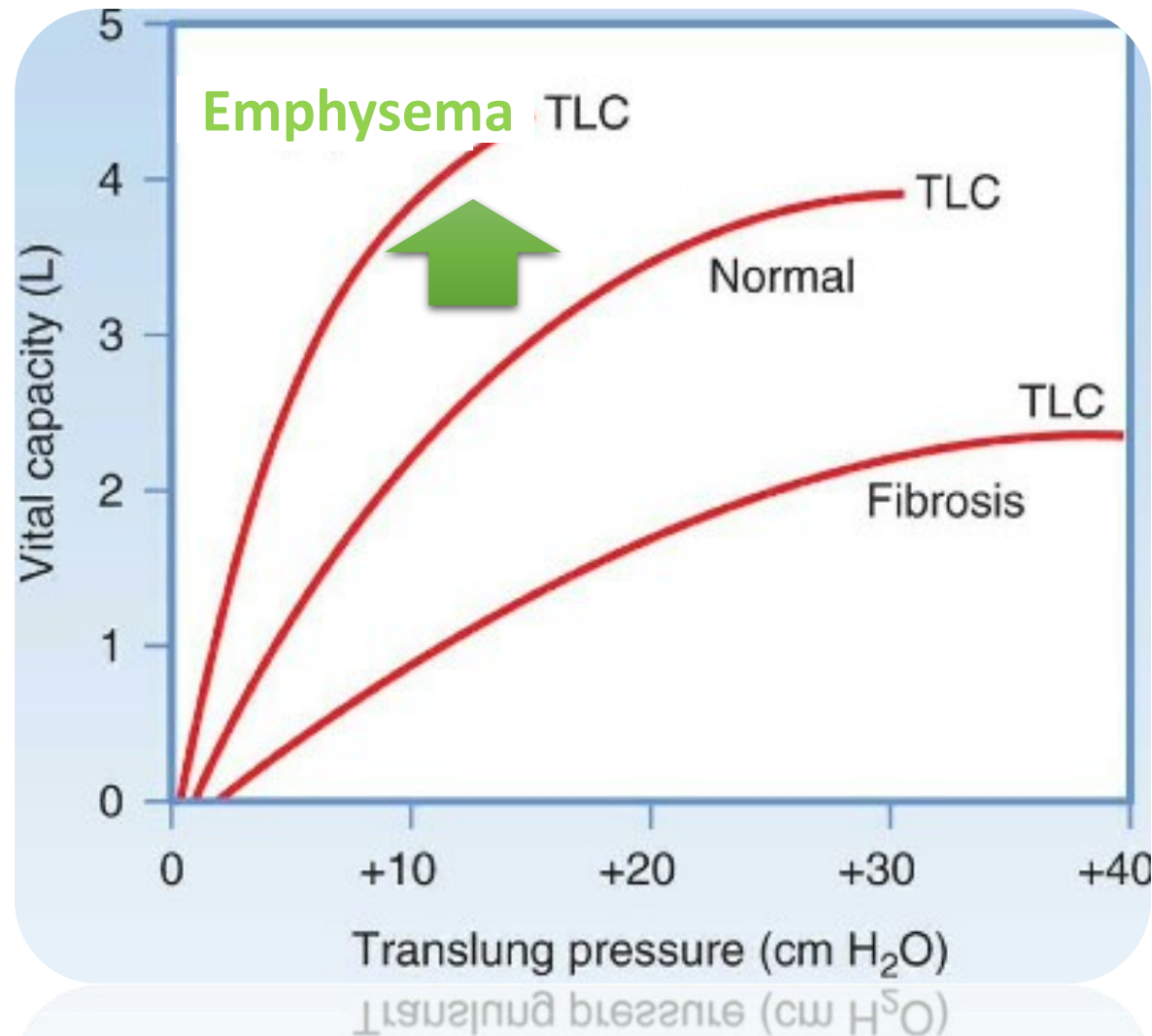
Lung Compliance

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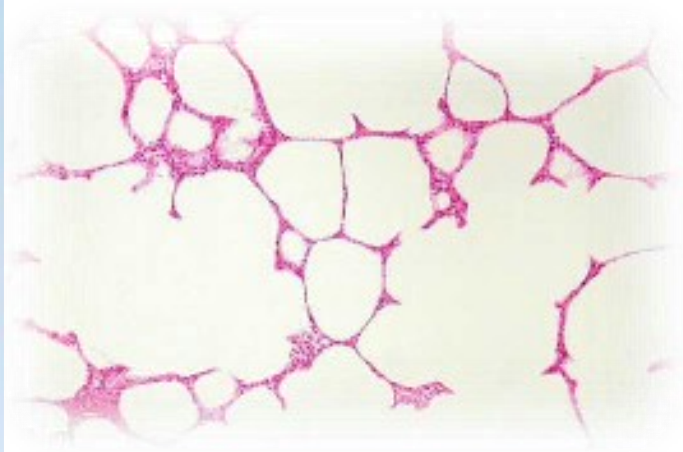


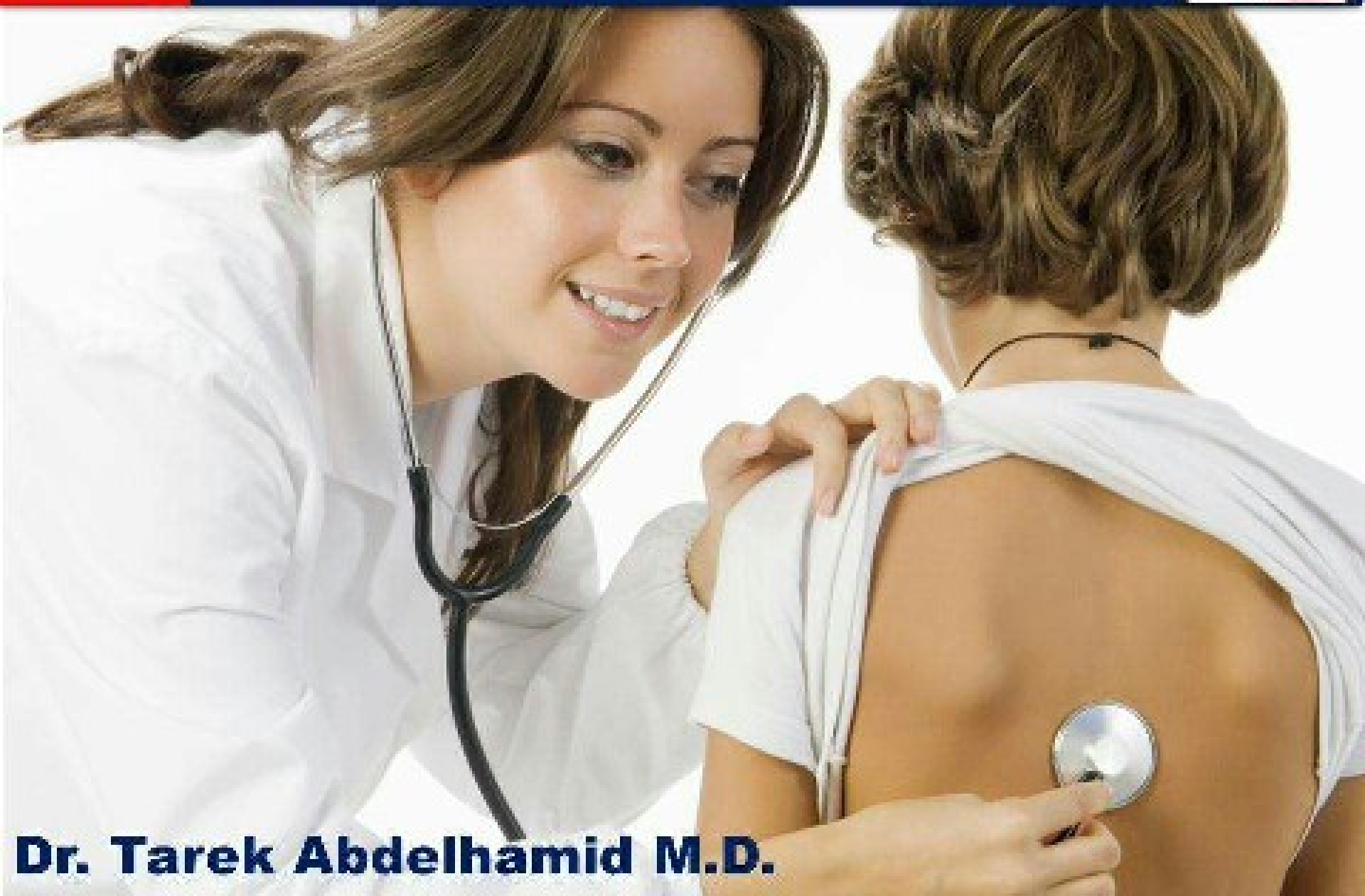
Lung Compliance

Pulmonary **compliance** (or **lung compliance**) is a measure of the **lung's** ability to stretch and expand. Static **lung compliance** is the change in volume for any given applied pressure.



Emphysema





تحذير هام

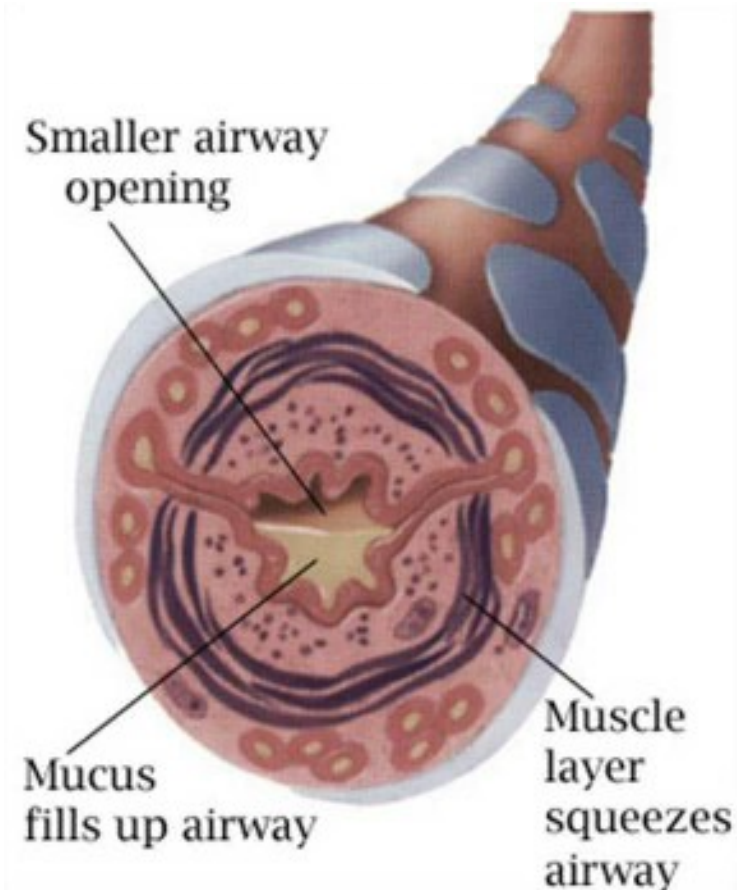
هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية

هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية و لا يحق لأحد إستخدامه او تحميله أو إستنساخه أو إعادة طبعه أو طبع أجزاء منه بدون إذن مسبق من الدكتور طارق عبد الحميد (أو من ينوب عنه قانونياً). و من يتعدى على الملكية الفكرية المذكورة فسوف يتعرض للمسائلة القضائية عن جريمة إنتهاك حقوق الملكية الفكرية. و إستخدام الفيديوهات و المادة العلمية المذكورة مكفول فقط لمشتري واحد فقط و لأخذ تصريح إستخدام لأكثر من شخص برجاء الإتصال بالدكتور طارق عبد الحميد



Definition

Asthma is a clinical condition characterized by *Reversible* airway narrowing as a result of increased airway responsiveness (or Hypersensitivity) to different stimuli.



Aetiology

Exposure to antigens (e.g. Food-Drugs- animals- Dust- and others) in hypersensitive patients.



Asthma Triggers

A diagram of a mast cell, which is a large, oval-shaped cell with a purple nucleus and numerous blue granules. Two red dots, representing allergens, are shown above the cell, each bound to a Y-shaped IgE antibody. The text 'IgE' is written in blue to the left of the antibodies.

Histamine
Leukotrienes: SRSA
ECF

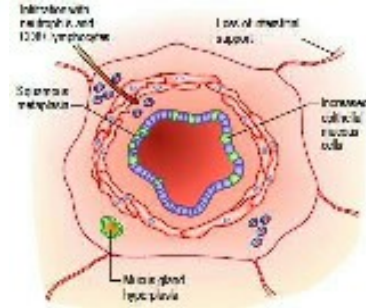


3 Bronchospasm

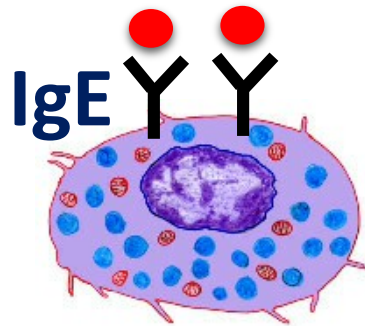
4 LOAR

5 More inflammatory response

Hyper inflated alveoli



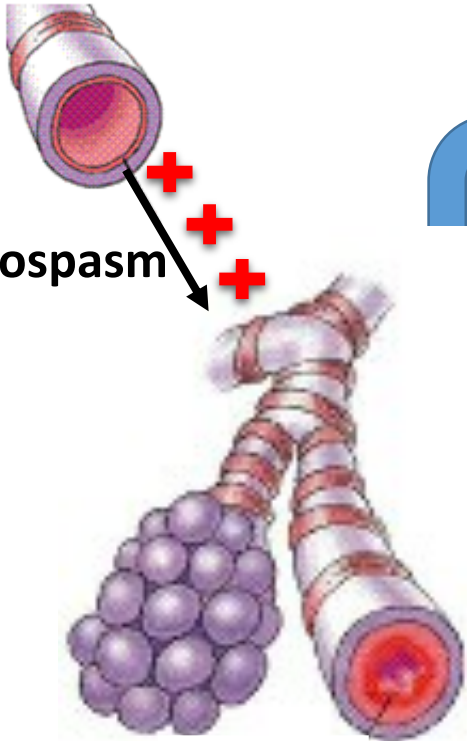
Pathogenesis



① Antigen binding to IgE on Mast cell membrane

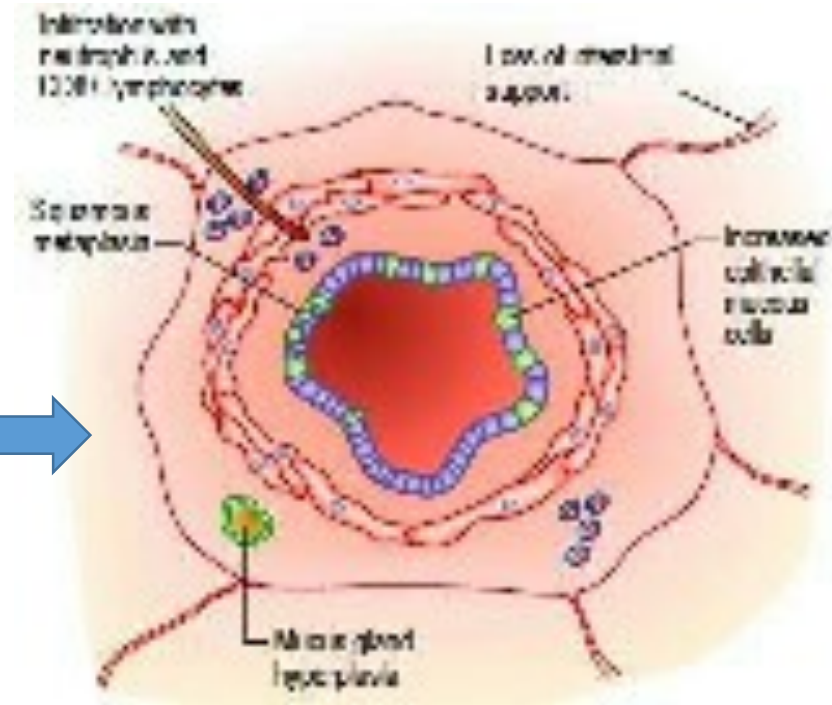
② Release of Mediators

Histamine
Leukotrienes: SRSA
ECF



③ Bronchospasm

④ LOAR



Clinical Picture

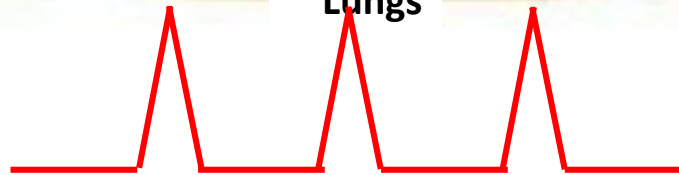
Normal
alveolar
breathing
(week) with
prolonged
expiration

Typically the attacks
occur in **Early morning**

Cough and
expectoration of white
viscid sputum

Recurrent attacks
of dyspnea and
wheezing

Wheezes
(Rhonchi)



The patient is usually
free in between the
attacks

Signs of severe asthma



- 1 Inability to speak**
- 2 Use of accessory Muscles**
- 3 Pulsus Paradox**
- 4 Normal or elevated CO₂**
- 5 FEV₁ less than 50%**
- 6 Silent Chest**
- 7 Bradycardia**
- 8 Drowsy patient**

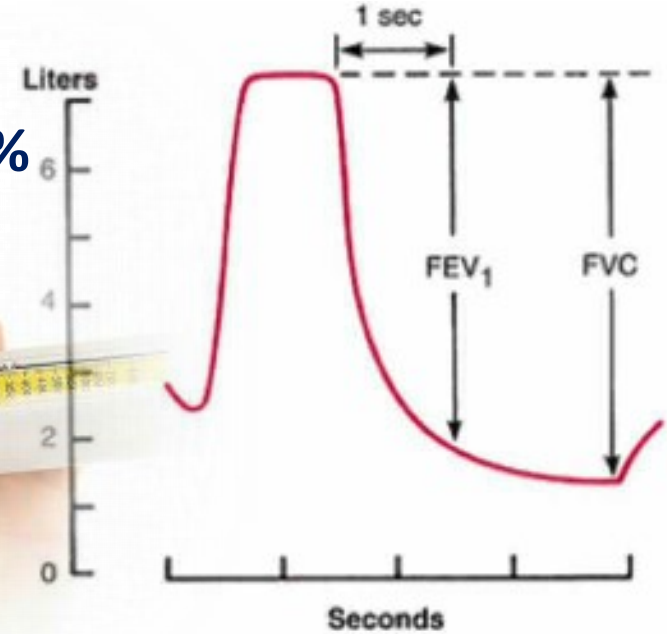
Special Investigations

↓ **FEV₁**

Fall in FEV₁ >20%

↓ **FEV₁/ FVC**

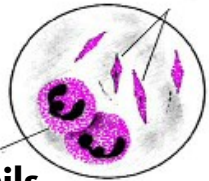
↓ **O₂** ↓ **CO₂**



Methacholine or Histamine challenge test: Fall in FEV₁ >20%

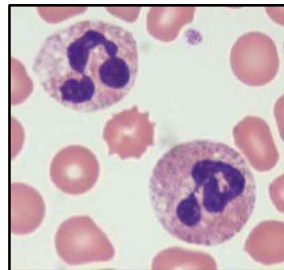
Sputum Examination

Epithelial cells



Eosinophils

Eosinophilia

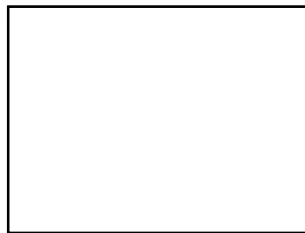


↑ **IgE**

Treatment of Acute attack

- 
- ① Selective Beta 2 stimulants by Inhalation (SABD)
 - ② Supplemental Oxygen
 - ③ **Add** Anticholinergics: e.g. Ipratropium bromide
 - ④ Systemic corticosteroids
 - ⑤ Oral corticosteroids upon discharge from the ER (to diminish the **LOAR**)

If no response
for one hour



If Respiratory
Failure



Treatment of Acute attack

- 
- ① Selective Beta 2 stimulants by Inhalation (SABD)
 - ② Supplemental Oxygen
 - ③ **Add** Anticholinergics: e.g. Ipratropium bromide
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If no response
for one hour



**IV Mg
Sulfate**

If Respiratory
Failure



Treatment of Acute attack

- 
- ① Selective Beta 2 stimulants by Inhalation (SABD)
 - ② Supplemental Oxygen
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 - ④ Systemic corticosteroids
 - ⑤ Oral corticosteroids upon discharge from the ER (to diminish the **LOAR**)

If no response
for one hour



**IV Mg
Sulfate**

If Respiratory
Failure



**Mechanical
Ventilation**

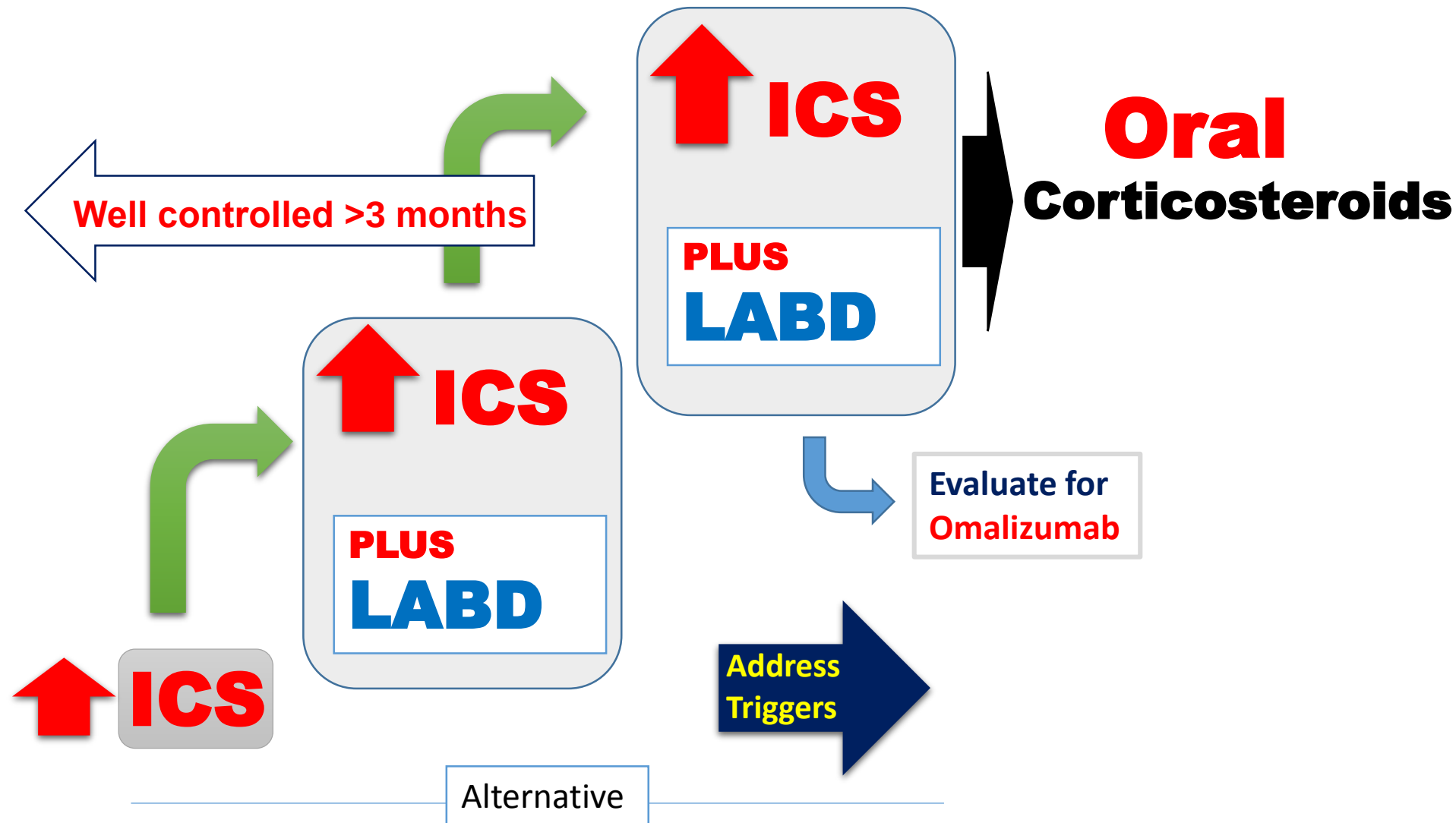
Prophylactic treatment



- ① Inhaled corticosteroids
- ② Mast cell membrane stabilizers
- ③ Sustained release theophylline
(measure serum theophylline on regular basis to avoid toxicity)
- ④ Leukotriene Receptor antagonists LTRA
- ⑤ Avoid known allergens that induce the attacks such as *foods* , *smell*, *animals*

A change in PEF values More than 20% per day suggests poorly controlled asthma.

Therapeutic strategy for Bronchial asthma



- 1 Mast cell membrane stabilizers
- 2 LTRA
- 3 Sustained Release Theophylline

Special Considerations

**Exercise
Induces
asthma**



**Mast cell membrane
stabilizers (**Cromlyn**)**

OR/ Beta 2 stimulants
before exercise

**Aspirin
Induced
asthma**



**Consider using A
Leukotriene Receptor
Antagonists **LTRAs**
(e.g. Montelukast or
Zafirlukast)**

**Beta
Blockers
Induced
asthma**



**Inhalational
Anticholinergics
e.g. Ipratropium
Bromide**

Special Considerations

Pregnancy



Treatment is OK

Risk of poorly controlled asthma is more than possible risks of the medications

Persistent nocturnal symptoms despite prophylactic treatment

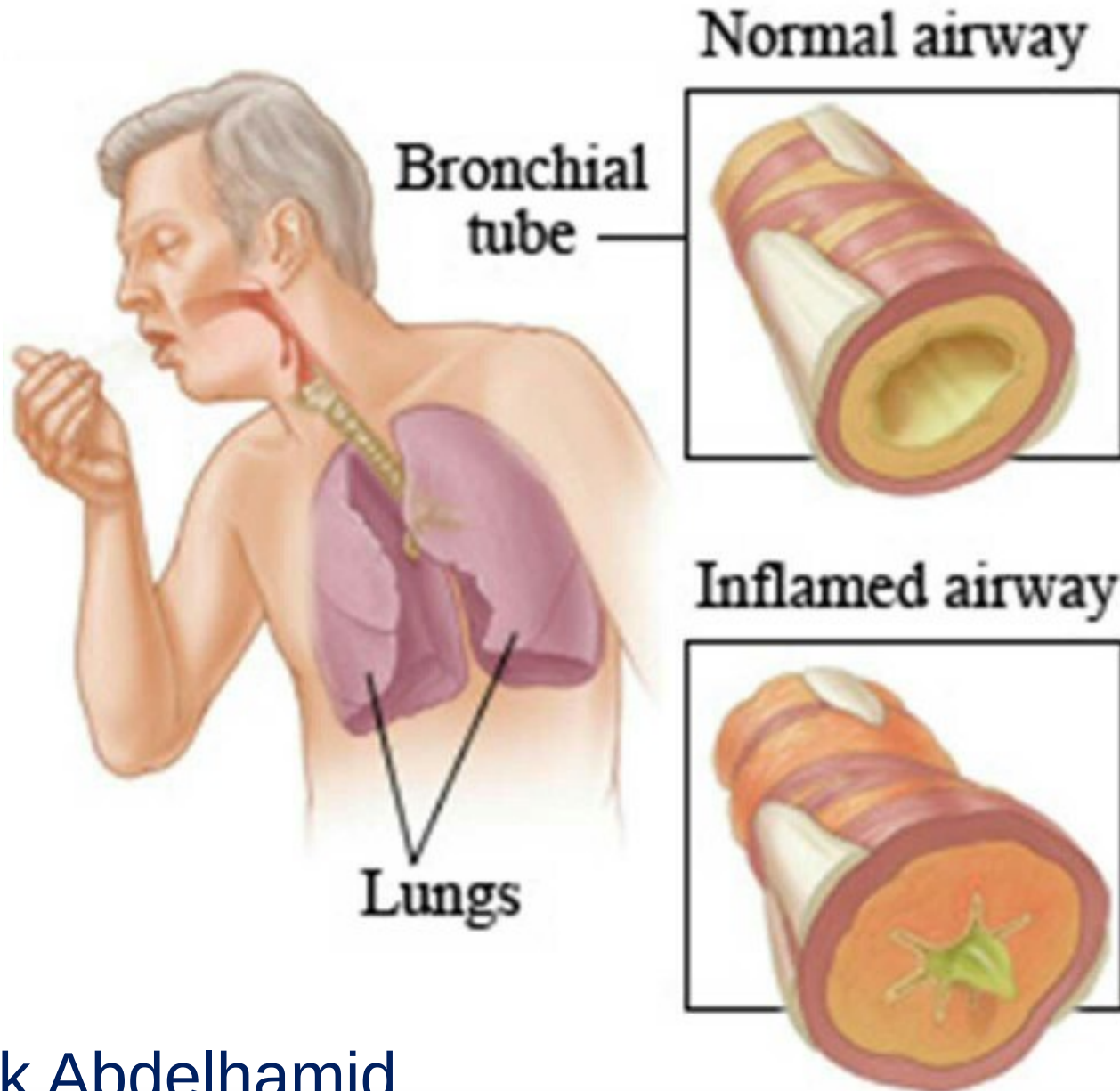


Add Inhalational Beta 2 stimulant to the prophylactic treatment before bed time

Unsatisfactory treatment



Bronchial Thermoplasty



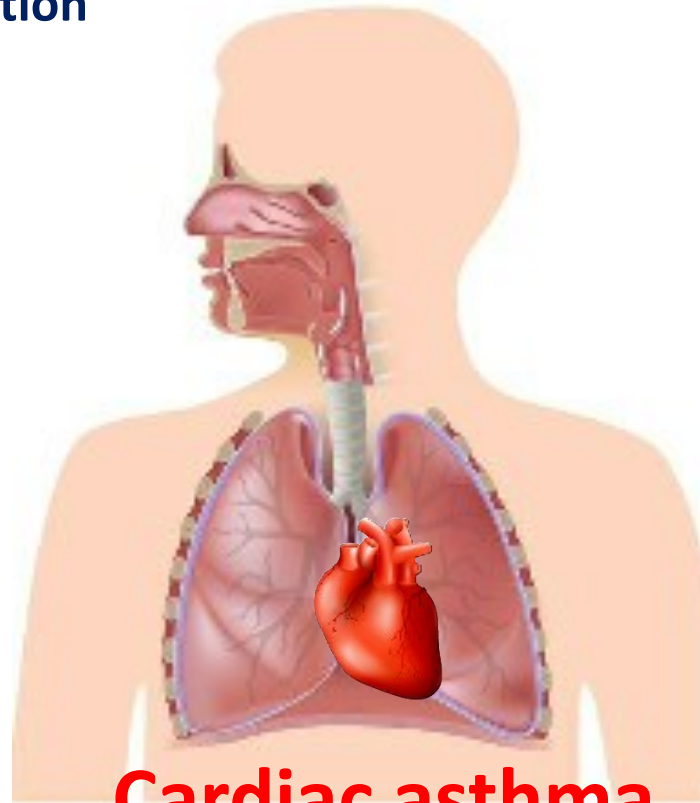
تحذير هام

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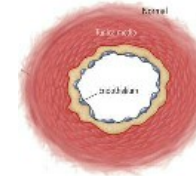
- ① Vocal cord dysfunction
- ② Rhino sinusitis
- ③ Angioedema
- ④ Relapsing polychondritis
- ⑤ Reflux Esophagitis



Cardiac asthma



Bronchial asthma
Asthmatic bronchitis
Bronchiectasis



PAN



Uremia



Allergic alveolitis
Trichinella spiralis
ABPA

Children

**Epiglottitis- Foreign
 body inhalation-
 Bronchiolitis**

Intrinsic Asthma

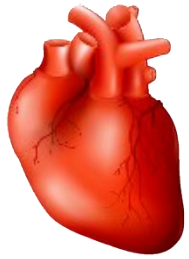
Attacks of
asthma without
any precipitating
cause

- ① NOT familial
- ② NOT IgE mediated
- ③ Old age
- ④ Unusual sensitivity to salicylates
- ⑤ ?! Nasal polypi

DD of Asthmatic attacks



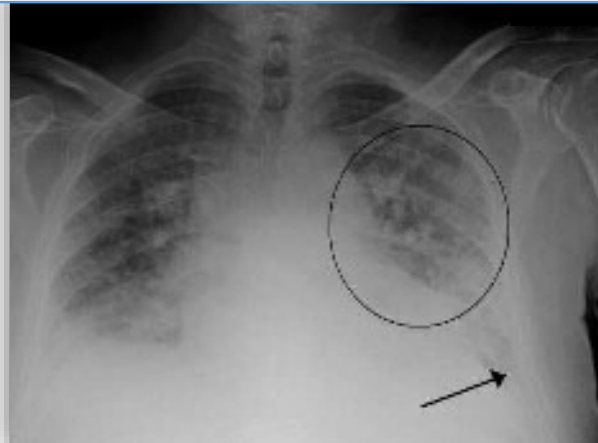
Cardiac Asthma



**Cardiac
asthma**

- ① Old
- ② History of cardiac lesion
- ③ Typically 2-3 hours after sleep
- ④ Mainly crackles
- ⑤ Frothy pinkish sputum
- ⑥ X Ray usually abnormal

DD of Asthmatic attacks

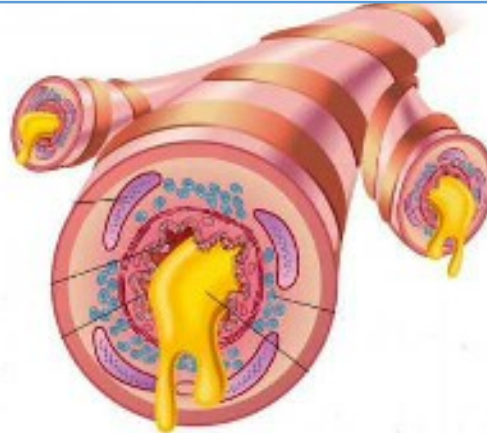


Asthmatic Bronchitis

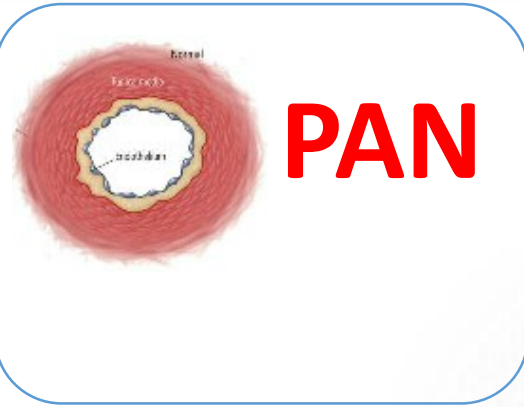
Asthmatic bronchitis

- 1- Begins as chronic bronchitis followed by hyperreactive airways disease
- 2- Usually Old age
- 3- Sputum: **PMNLs**
- 4- History of active chronic cough with (**Mucopurulent**) sputum production

DD of Asthmatic attacks

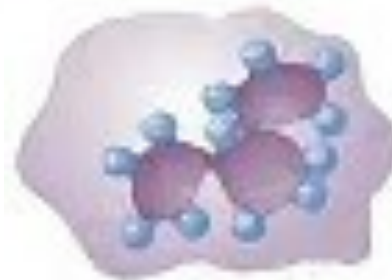


Polyarteritis Nodosa



- ① Male
- ② Skin Rash
- ③ Multisystem disease affection
- ④ +++ ESR
- ⑤ **p-ANCA**

DD of Asthmatic attacks



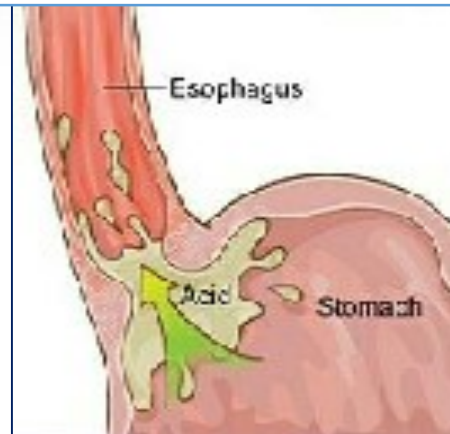
p-ANCA

Reflux Esophagitis

Reflux Esophagitis

Prominent GIT manifestations such as Heartburn, regurgitation, and dysphagia.

DD of Asthmatic attacks



Carcinoid Syndrome

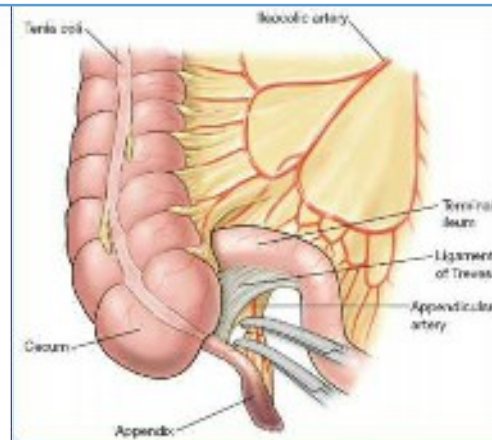
**Carcinoid
Syndrome**

Serotonin

Diarrhea
Flushes
Bronchospasm

 **5-HIAA**

DD of Asthmatic attacks



Trichinosis

**Trichinella
spiralis**



Phase 1:

Diarrhea-Abdominal pain-
Fatigue-Nausea and vomiting

Phase 2:

High fever
Muscle pain and tenderness
Swelling of the eyelids or face
Weakness
Headache
Photo Sensitivity
conjunctivitis

DD of Asthmatic attacks



ABPA

**Allergic
Broncho
pulmonary
aspergillosis**



- 1- Progressive symptoms of asthma, such as wheezing and shortness of breath and a mild fever.
- 2- Associated manifestations of allergy
- 3- Cough with brownish flecks or bloody mucous
- 4- ?! Antifungal medications

DD of Asthmatic attacks



Allergic alveolitis

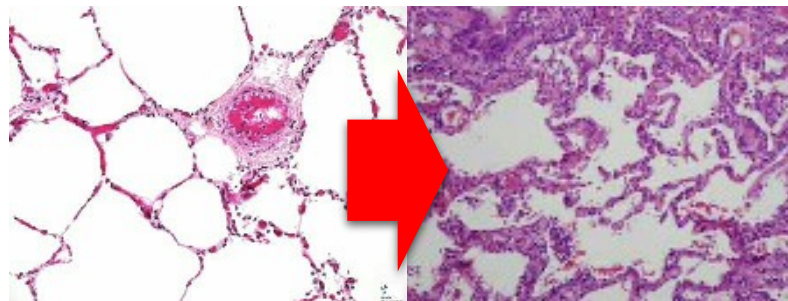
Allergic Alveolitis

Diffuse inflammation of lung parenchyma and airways in response to the inhalation of **antigens** to which the patient has been previously sensitized.

Treatment includes avoiding the antigens *plus* Corticosteroids.

Antigens include microbes, animal proteins, and low-molecular-weight chemicals.

Hypersensitivity pneumonitis (HP), also called extrinsic allergic alveolitis.



Drugs

Drugs

- ① Aspirin-
- ② Beta Blockers
- ③ Captopril
(ACE-I)

DD of Asthmatic attacks



Relapsing Polychondritis

Relapsing Polychondritis

Recurrent inflammation of cartilaginous and other proteoglycan-rich tissues. Diagnosis is usually made on the basis of chondritis in two of three sites (auricular, nasal, laryngotracheal). The mainstay of treatment is systemic **corticosteroid therapy**.

DD of Asthmatic attacks

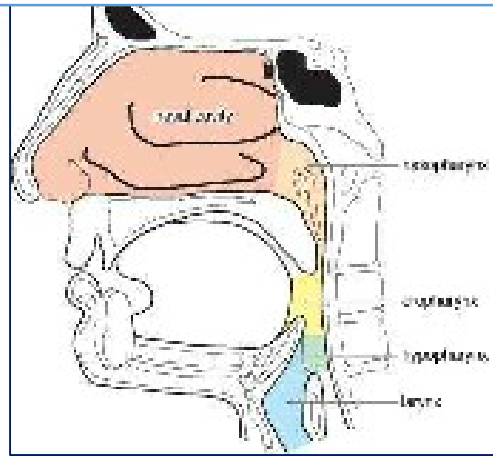


Upper Airway Obstruction

Upper airway
obstruction

- 1- Vocal cord lesions
- 2- **Angioedema**
- 3- Mass
- 5- Foreign body

DD of Asthmatic attacks



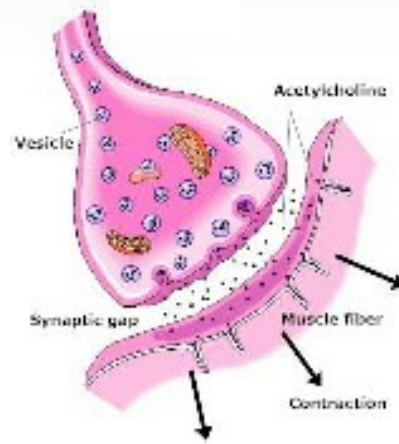
Myasthenia Gravis

Myasthenia gravis



- ① Recurrent attacks of muscle weakness
- ② Associated with ptosis, diplopia, difficulty in swallowing, dyspnea, difficulty in speaking.
- ③ Improve by Anticholinesterases

DD of Asthmatic attacks



Hysterical

**Hysterical
(Conversion
disorder)**

**Evaluation by
a Psychiatric**

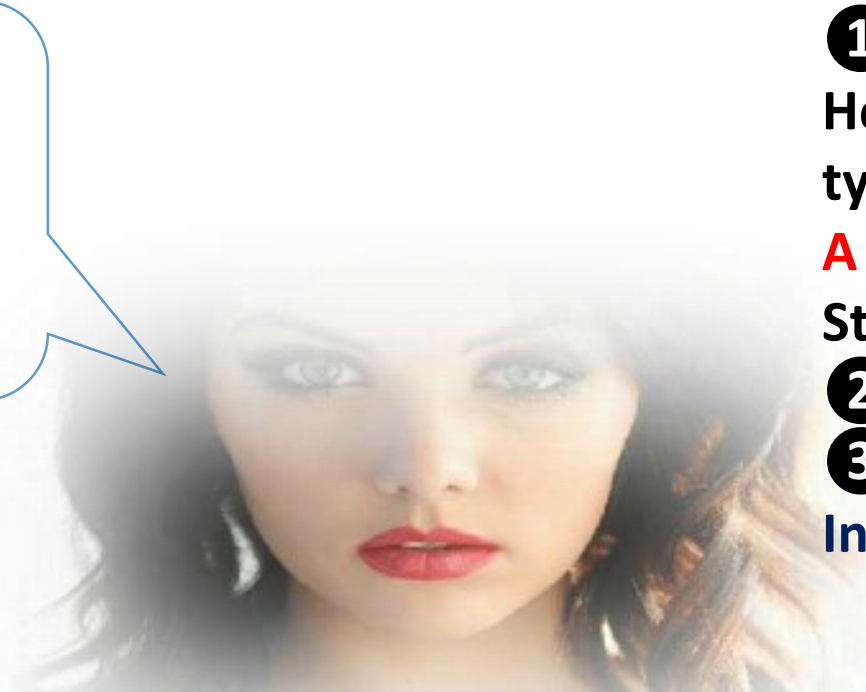


DD of Asthmatic attacks



Pediatric causes

Pediatrics



- ① Epiglottitis
Hemophilus influenzae
type B but NOW group
A b-hemolytic
Streptococci
- ② Bronchiolitis (**RSV**)
- ③ Foreign body
Inhalation

DD of Asthmatic attacks

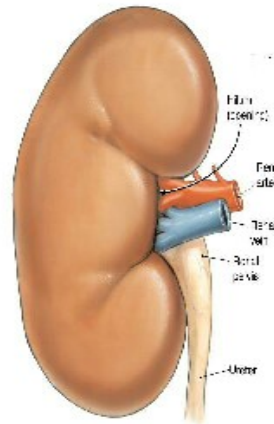


Renal Asthma

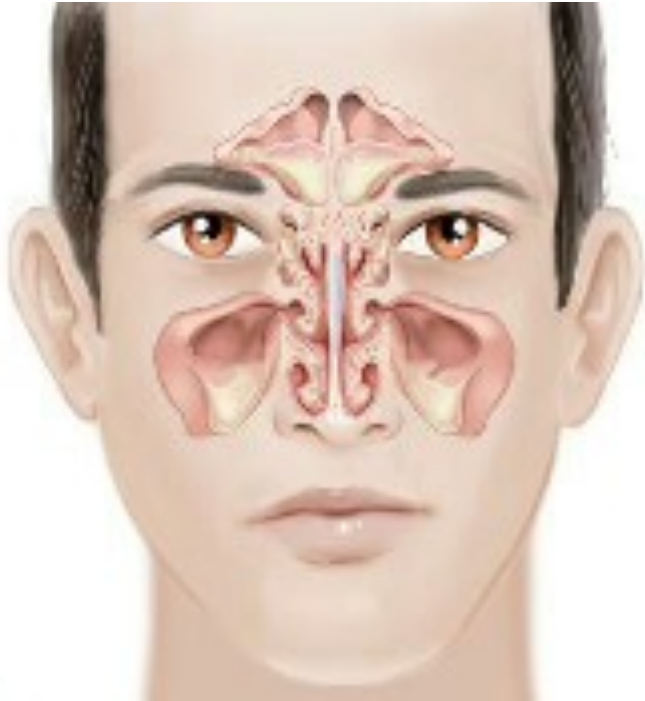
Uremia

Features of Uremia are prominent

DD of Asthmatic attacks



Rhinosinusitis



Rhinitis is defined as the presence of sneezing, rhinorrhea (anterior and posterior), nasal congestion, and/or nasal itching, arising from irritation and inflammation of the nasal passages.

Rhinosinusitis describes disorders affecting both the nasal passages and paranasal sinuses.

Symptoms of sinus involvement include nasal congestion, posterior nasal drainage, facial pressure and pain, headache, fatigue, and reduced sense of smell.

Treatment by Intranasal corticosteroids-Saline rinses- and Antihistaminics



تحذير هام

هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية

هذا الفيديو و جميع الرسوم التوضيحية المتاحة فى هذا الموقع هم تحت حماية قانون الملكية الفكرية و لا يحق لأحد إستخدامه او تحميله أو إستنساخه أو إعادة طبعه أو طبع أجزاء منه بدون إذن مسبق من الدكتور طارق عبد الحميد (أو من ينوب عنه قانونياً). و من يتعدى على الملكية الفكرية المذكورة فسوف يتعرض للمسائلة القضائية عن جريمة إنتهاك حقوق الملكية الفكرية. و إستخدام الفيديوهات و المادة العلمية المذكورة مكفول فقط لمشتري واحد فقط و لأخذ تصريح إستخدام لأكثر من شخص برجاء الإتصال بالدكتور طارق عبد الحميد



Methods of Delivery

Inhaler

Spacer

Nebulizer

Inhaler



Spacer



Nebulizer



Acute



- 1 Short Acting Beta 2 agonists
- 2 Anti Cholinergics
- 3 Systemic Corticosteroids

① Short Acting Beta 2 Agonists

The most effective bronchodilator during exacerbations

Use before exercise for exercise induced asthma

Side effects :

**Tremors- Anxiety-tachycardia
Hypokalemia (Due to activation of Na-K ATPase), Hypomagnesemia (Increased Mg excretion in Urine)
Prolonged QT interval**



② Anti Cholinergics (Inhalation)

- ① Reverse vagally mediated bronchospasm (not allergen)
- ② Use for drug induced asthma
- ③ Decreases mucous gland secretions

Ipratropium Bromide:

No atropine Side Effects

Decreases rate of hospitalization when added to SABA in cases of moderate and severe asthma

Inhalational drug of choice in: Beta Blockers induced asthma



③ Systemic Corticosteroids

- ① Increases speed of resolution of asthma and should be administered to all patients.
- ② Decreases the rate of relapse
- ③ The earlier to use during the attack the better the results
- ④ If the asthma is severe (**FEV1 less than 50%**) start oral corticosteroids in home

Outpatient:

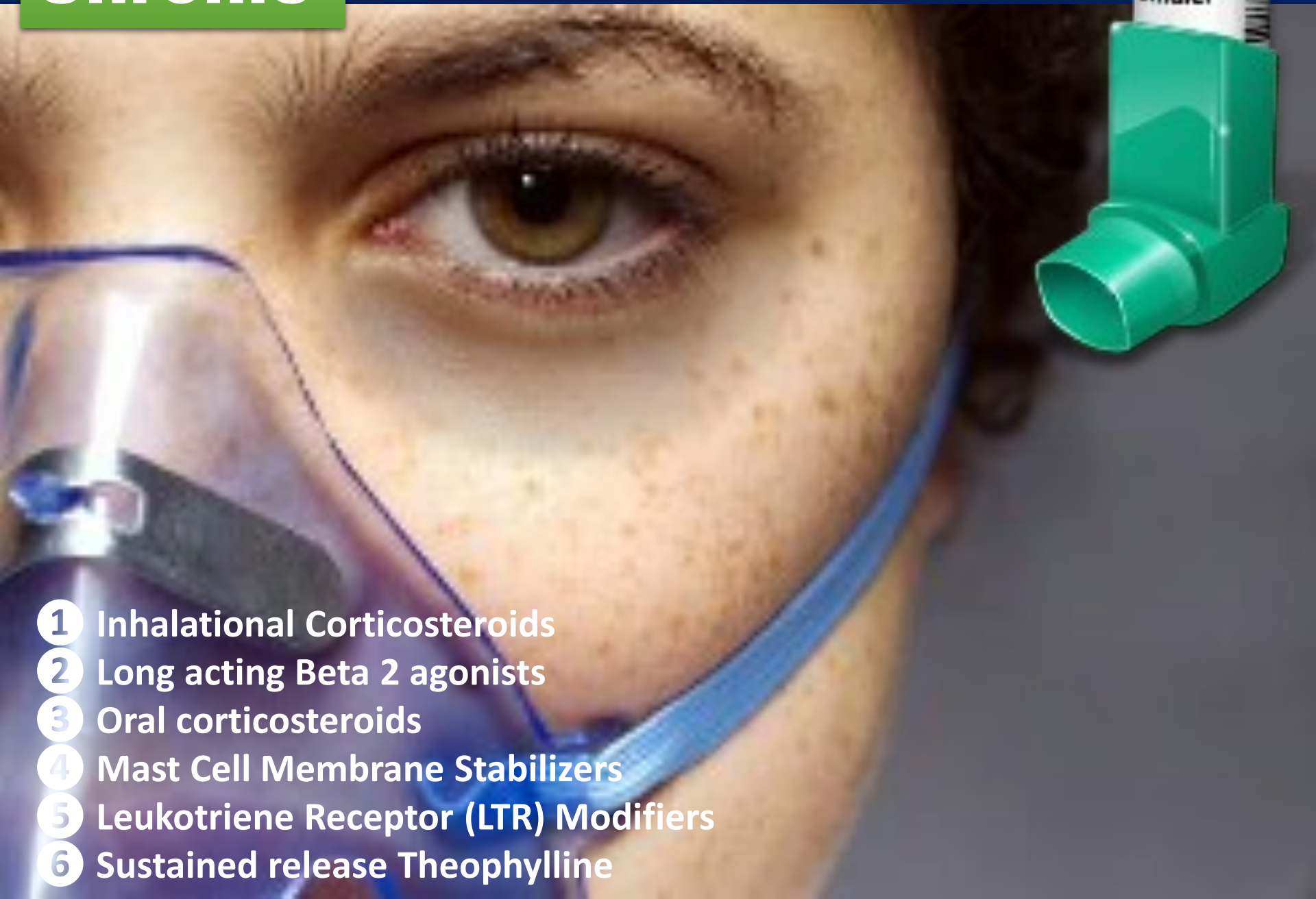
Prednisone “burst” therapy (1mg per Kg body weight) 1 week or until FEV1 is above 50%

Hospital:

IV Methylprednisolone, 125 mg



Chronic



- 1 Inhalational Corticosteroids
- 2 Long acting Beta 2 agonists
- 3 Oral corticosteroids
- 4 Mast Cell Membrane Stabilizers
- 5 Leukotriene Receptor (LTR) Modifiers
- 6 Sustained release Theophylline

1

ICS

Inhalational Corticosteroids

- ➊ Preferred first line for prophylaxis (if persistent asthma)
- ➋ 2 puffs per day are usually sufficient
- ➌ Adjust dose based on clinical response
- ➍ May cause cough-Dysphonia- and Oropharyngeal candidiasis
- ➎ Use of Inhalation chamber (Spacer) + Mouth washing after ICS may decrease the side effects
- ➏ If you used very high dose it may cause systemic effects



2 Long Acting Beta 2 agonists

Salmeterol and Formoterol

- 1 Broncho dilatation up to 12 hours (after a single dose)
- 2 Effective for long term prevention of asthma symptoms
- 3 Use before Exercise Induced Asthma
- 4 Use before sleep to control nocturnal symptoms

Don't use them as monotherapy
(No anti-inflammatory effect *plus* Increased incidence of fatal complications)



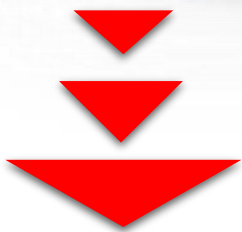
③ Oral corticosteroids

A short course oral corticosteroids (Prednisone 40-60 mg for 1Week) is indicated if:

① Chronic symptoms are severe and accompanied by night time awakening

OR/

② PEF is Less than $< 70\%$ of predicted values



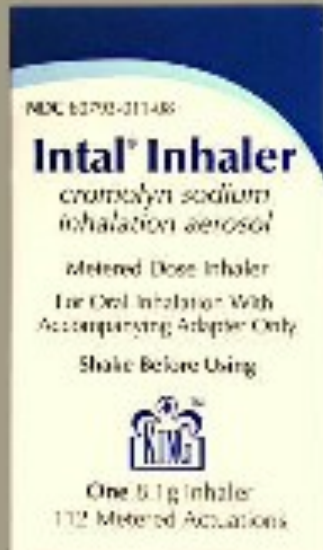
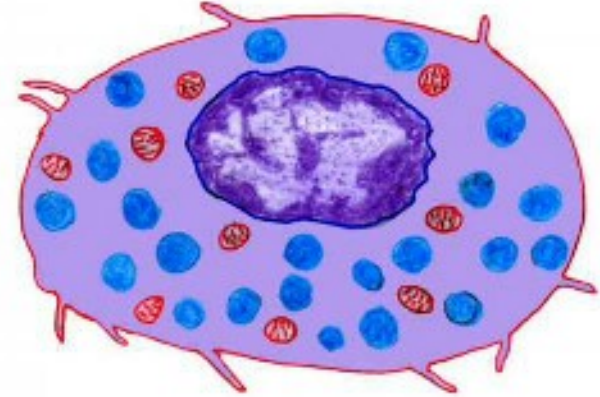
1W

4

Mast Cell Membrane Stabilizers

- 1 Modulate mast cell membrane
- 2 Decrease eosinophil recruitment
- 3 Decrease early and late asthmatic response

Do not relieve the symptoms of asthma (Use before exercise in Exercise Induced Asthma)



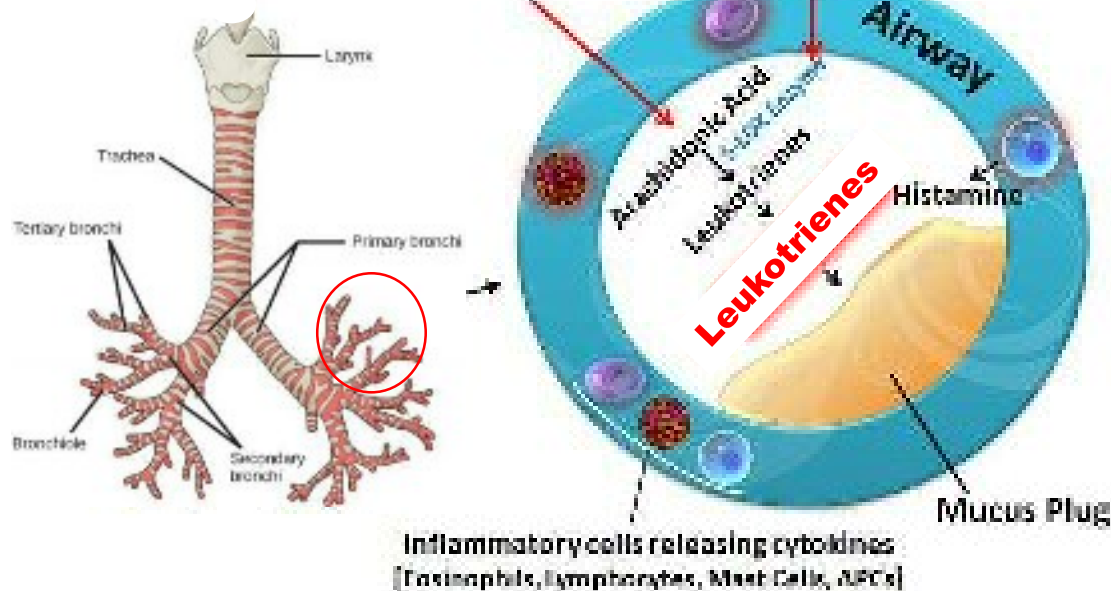
5 LTR Modifiers

Current Medial Diagnosis and Treatment 2015

“In a real-life community trials, LRAs were equivalent to ICS as first line long term controller medication for asthma)”.

Targeting the LOX Enzyme to fight airway inflammation

Biosynthesis of Leukotrienes



5 LTR Modifiers

Current Medial Diagnosis and Treatment 2015

“In a real-life community trials, LRAs were equivalent to ICS as first line long term controller medication for asthma)”.

**Montelukast
Zafirlukast**



Inhibits Cysteinyl
Leukotriene receptor

LRA

Zileuton



5- Lipoxygenase Inhibitor

5 LTR Modifiers

Current Medial Diagnosis and Treatment 2015

“In a real-life community trials, LRAs were equivalent to ICS as first line long term controller medication for asthma)”.

MONTELUKAST

Montelukast is administered orally
once daily

Absorption is not affected by food.

No drug interactions have been
documented.



5 LTR Modifiers

Current Medial Diagnosis and Treatment 2015

“In a real-life community trials, LRAs were equivalent to ICS as first line long term controller medication for asthma)”.

ZAFIRLUKAST

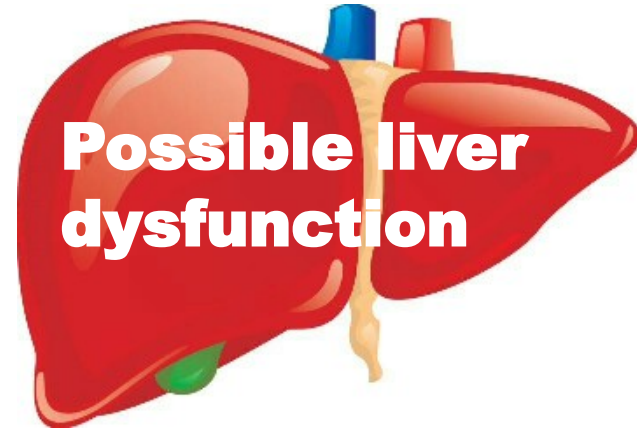
The most common adverse effects are Pharyngitis, headache, rhinitis, and gastritis.

Possible liver dysfunction (including liver failure) **① Avoid** in patients with hepatic dysfunction

② Monitor liver enzymes every two to three

?!
↓
↓
↓

Possible liver dysfunction



5 LTR Modifiers

Current Medial Diagnosis and Treatment 2015

“In a real-life community trials, LRAs were equivalent to ICS as first line long term controller medication for asthma)”.

ZILEUTON

Metabolized by the cytochrome P450 system of the liver, thus may affect other drugs metabolized by these enzymes such as warfarin (Coumadin), theophylline, and propranolol (Inderal).
Monitor Liver enzymes it.



Anticoagulants
(Oral anticoagulants:
Warfarin)
Bronchodilators
(**Theophylline**)
Cardiac drugs (Beta
blockers: Inderal)

6 Sustained release Theophylline

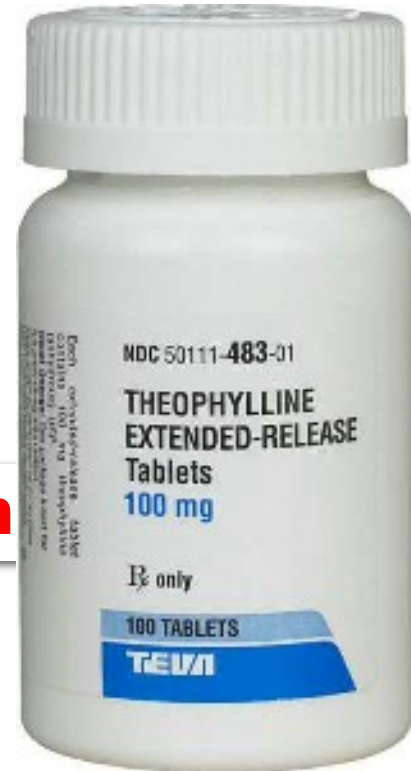
- 1 Anti-inflammatory properties**
- 2 Immunomodulatory effect**
- 3 Enhance Mucociliary clearance**
- 4 Strengthen diaphragmatic contractility**
- 5 Reliefs nocturnal symptoms**
- 6 Add-On therapy**

Monitor theophylline serum concentration

Side effects: Insomnia- Increase GER-
Urinary difficulty (BPH)

Toxicity:

- 1- Nausea- Vomiting- Tachycardia**
- 2- Headache**
- 3- Seizures**
- 4- Hyperglycemia**
- 5- Hypokalemia**



7 Omalizumab

- 1 A monoclonal antibody against IgE
- 2 Subcutaneous Injections
- 3 Improve associated allergic rhinitis





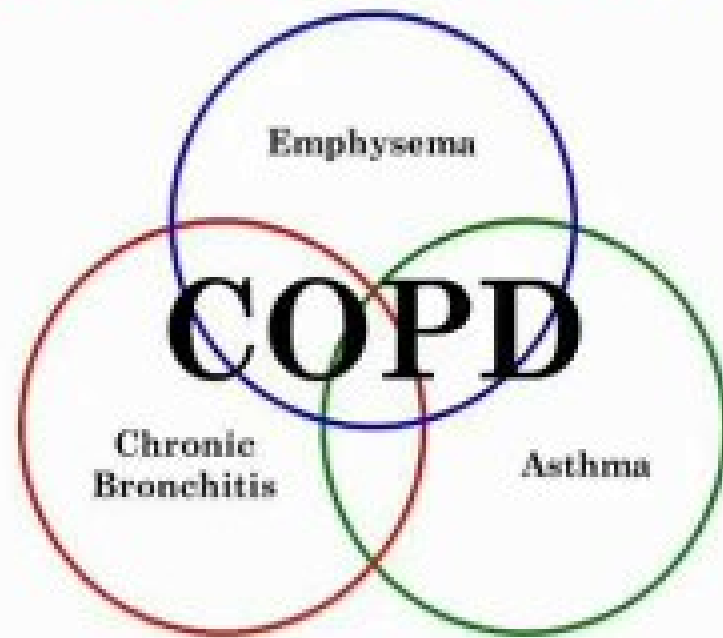
Dr. Tarek Abdelhamid M.D.

Definition

COPD is a disease characterized by the presence of

- 1 Airway obstruction
- 2 Chronic bronchitis
- 3 Emphysema

Unlike Bronchial Asthma, COPD is **Not associated** with significant element of reversibility (**Irreversible air way obstruction**).



Aetiology

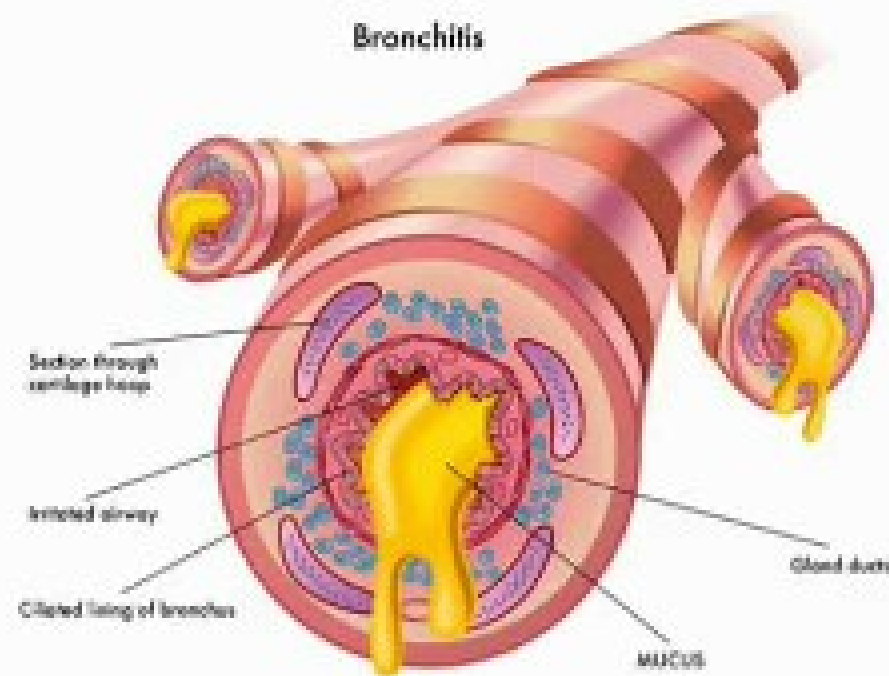
Chronic irritation of the bronchial tree e.g.

1- Cigarette smoking

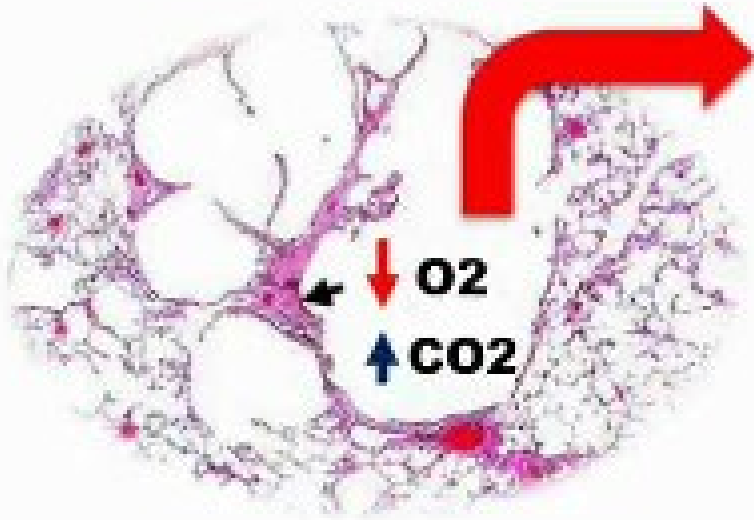
2- Cold damp atmosphere

3- Upper airway infections e.g. Chronic sinusitis

4- Alpha 1 Antitrypsin Deficiency



Pathogenesis



**Partial
Obstruction
“Pink Puffer”**

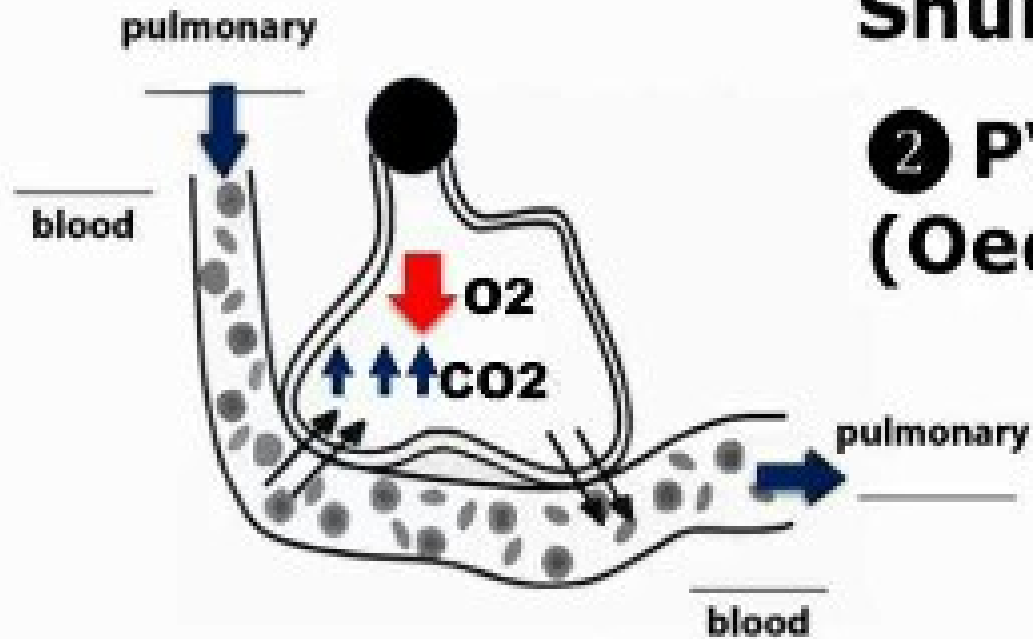
① Increase RBCs: **Pink**

② Stimulate the
Respiratory Center:
Puffer

Pathogenesis

① Right to Left
Shunt: **Blue**

② PVC...PH...RV...RVF
(Oedema): **Bloated**



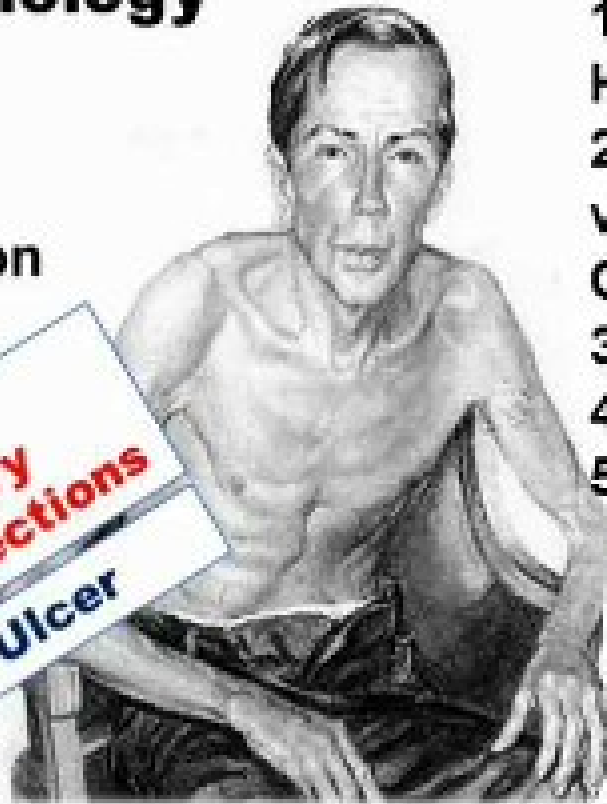
Complete Obstruction
“Blue Bloated”

Clinical Picture

Lung Pathology

Dyspnea &
Wheezes
Cough
Expectoration

Recurrent
Respiratory
tract Infections
Peptic Ulcer



↓ **O₂**

- 1- Polycythemia: Flushed face- Hypercoagulability
- 2- HKC: Rapid pulse- Increased pulse volume- warm hands- CHF- Osteoporosis
- 3- LCO Symptoms (qualitative)
- 4- RVH
- 5- Clubbing of fingers?! (Evaluate)

↑ **CO₂**

Headache- Papilledema- Flapping Tremors- CO₂ Narcosis (Increased DTRs and EPR)

Strain during Expiration

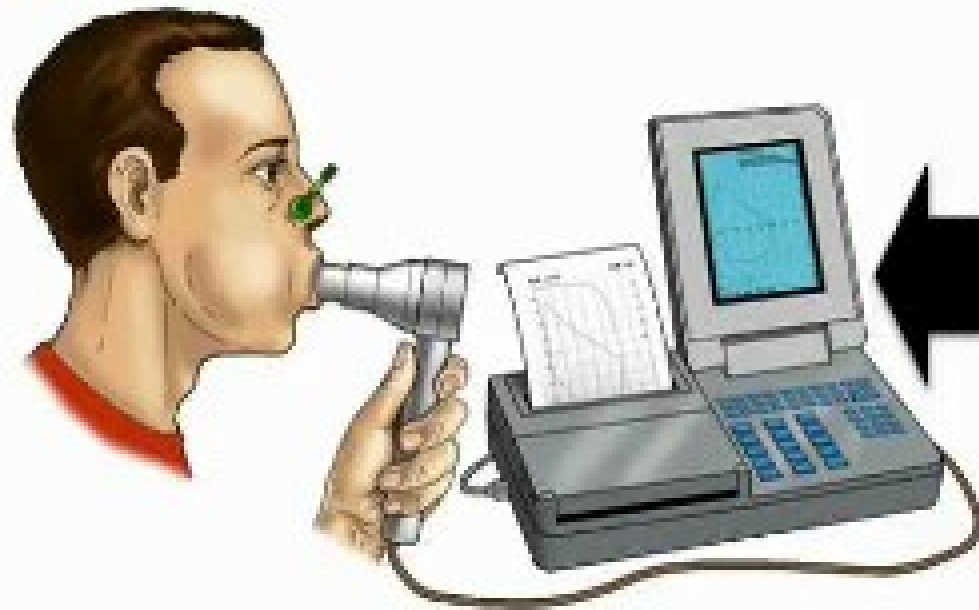
Expiratory filling of Neck veins-
Puffiness- Subconjunctival
Hemorrhages- Hernias-
Pneumothorax- Fracture Rib

Special Investigations

↓ FEV1

↓ FEV1/ FVC (Less than 0.7)

↑ TLC and RV



Sputum Examination
?! Infection

Absence of Abnormal
Bronchoconstrictor
Response to Methacholine
or Histamine challenge test
(Unlike Bronchial Asthma)

↓ O₂ ↑ CO₂

EKG



RVH

Special Investigations



- ① Increased Broncho vascular markings
- ② Flattening of the diaphragm
- ③ A long narrow heart
- ④ Horizontal Ribs
- ⑤ Focal Bullae

Treatment of Acute Exacerbations

① Inhaled Selective Beta 2 stimulants

Plus Ipratropium bromide

(to diminish secretions)

② Antibiotics (**Early**- If you suspected infection: e.g. Yellow sputum)

③ IV Steroids

④ O2 Inhalation

⑤ Mucolytic agents
(e.g. Guaifenesin)

could be helpful in some cases.



Note: Management of COPD exacerbations

- ① Approximately **50%** of COPD exacerbations are caused by bacterial infection.
- ② Antibiotics are indicated in **suspected bacterial respiratory infection** (e.g., Increased purulence and Volume of sputum).
- ③ *Haemophilus influenzae* and *Streptococcus pneumoniae* are frequent causes of acute bronchitis.
- ④ **Oral antibiotics of choice** are azithromycin, levofloxacin, amoxicillin-clavulanate, trimethoprim-sulfamethoxazole, doxycycline, and cefuroxime.
- ⑤ The **two best predictors** of potential benefit from antibiotics are:
 - **Purulent sputum**
 - **C-reactive protein (CRP)** level >40 mg/L.

Treatment of Chronic Cases

- 1 Ipratropium bromide (**First choice**)
- 2 Supplemental O₂
- 3 Physiotherapy
- 4 Long Acting Theophylline (at night)
- 5 STOP Cigarette smoking

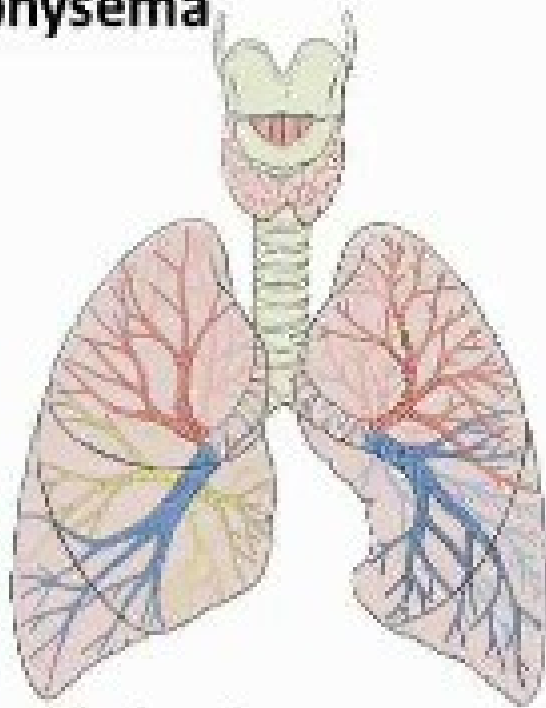


Note: Roflumilast
[Selective oral PDE4
Inhibitor]
to Reduce the Risk of
exacerbations.

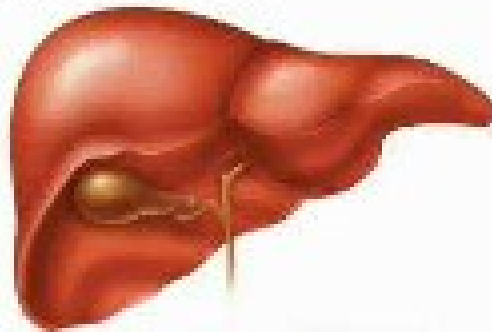
Clinical Pearls

- ① **Acute exacerbation of COPD** is mainly a **Clinical Diagnosis** and generally manifests with **Worsening dyspnea, Increase in sputum purulence, and Increase in sputum volume.**
- ② **All** patients with COPD should receive *Pneumococcal vaccine* and yearly influenza vaccine
- ③ **Phlebotomy** to keep the Hematocrit Value Less than 52%

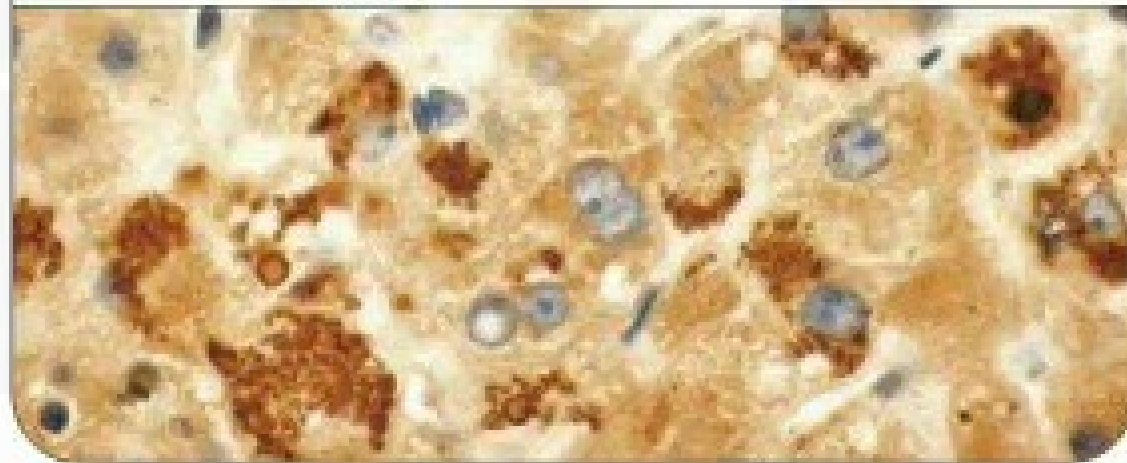
Emphysema



Liver Cirrhosis



α_1 -antitrypsin deficiency, PiZ
Agarose gel electrophoresis



تحذير هام

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Definition

α_1 -Antitrypsin (α_1 AT) deficiency is an **Autosomal Recessive** disease associated with accumulation of misfolded α_1 AT in the endoplasmic reticulum of hepatocytes.



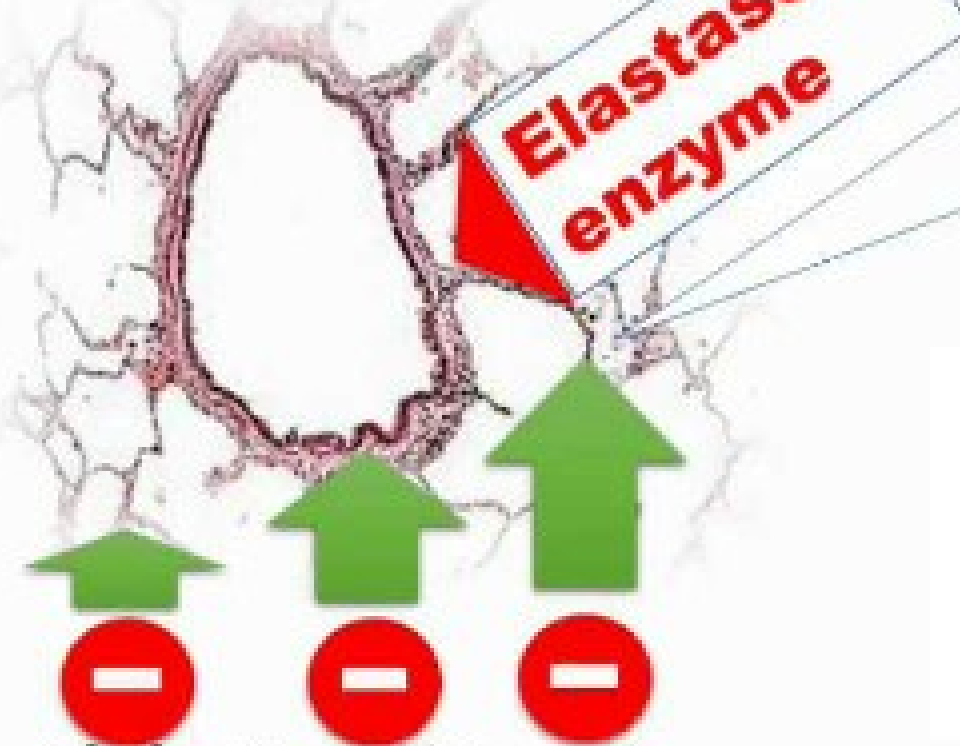
Aetiology

The most common allele is protease inhibitor M
(**PiM —normal**) [**MM Phenotype**]

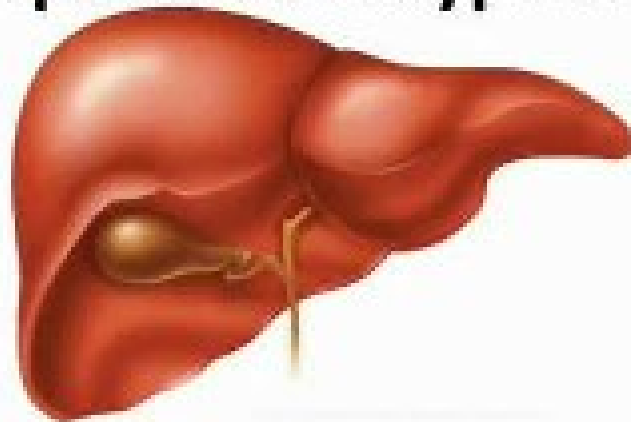
Deficient variants include PiS and PiZ.

Mechanism

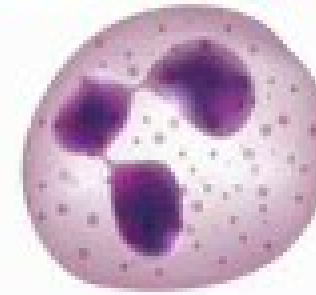
Continuous exposure
to Infection



Alpha1-antitrypsin

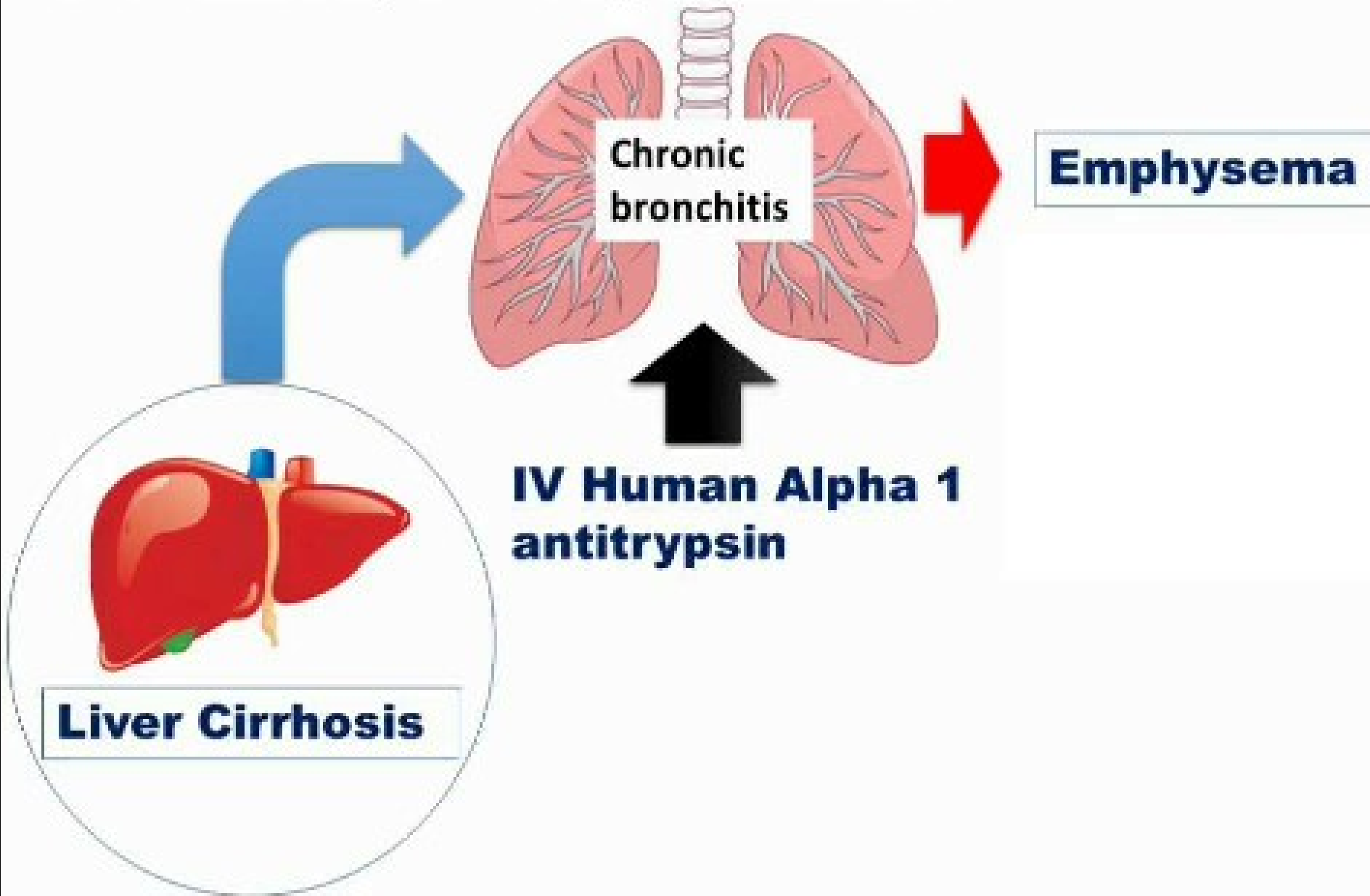


Neutrophils



Clinical Picture

Failure to Release Alpha 1 Anti-Trypsin from the liver



Clinical Picture

Clinical characteristics of affected patients may include:

- ①** Minimal smoking history
- ②** Early-onset COPD (e.g., Younger than 45 years of age)
- ③** Family history of lung disease
- ④** Lower lobe–predominant emphysema

α 1-Antitrypsin deficiency is found in 1–2% of COPD patients.

Investigations

- ① Low serum α_1 AT level.
- ② Deficient α_1 AT phenotype (PiSS, PiSZ, and PiZZ).
- ③ Elevated AST and ALT.
- ④ **Liver biopsy** shows characteristic periodic acid–Schiff–positive diastase-resistant globules in the periportal hepatocytes.
- ⑤ Some authorities recommend diagnostic testing for in all patients with COPD

Investigations

X Ray

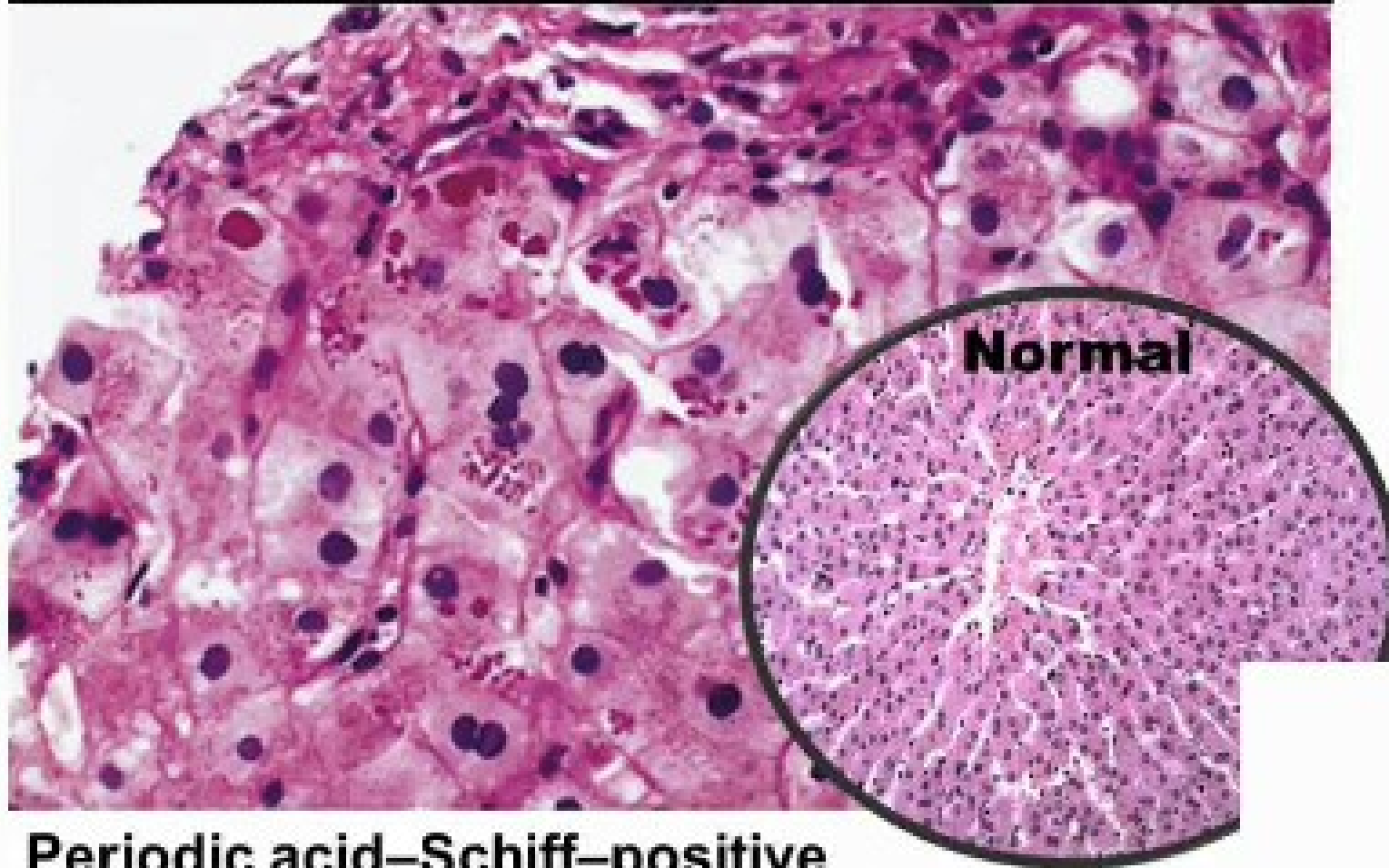


**Predominant
Emphysema in
Lower Lung
lobes.**



Liver Biopsy

Alpha 1-Antitrypsin Deficiency



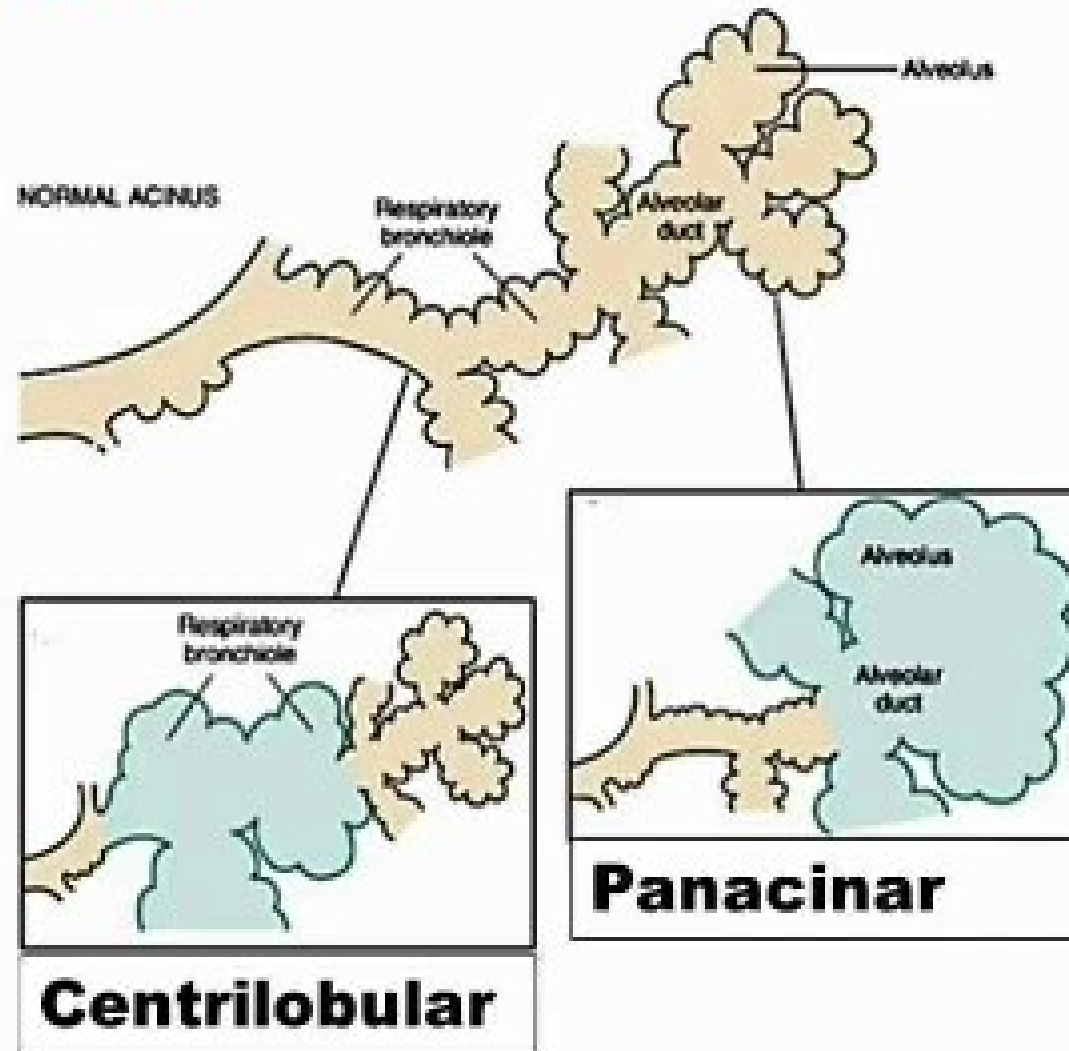
**Periodic acid–Schiff–positive
diastase-resistant globules in the
periportal hepatocytes**

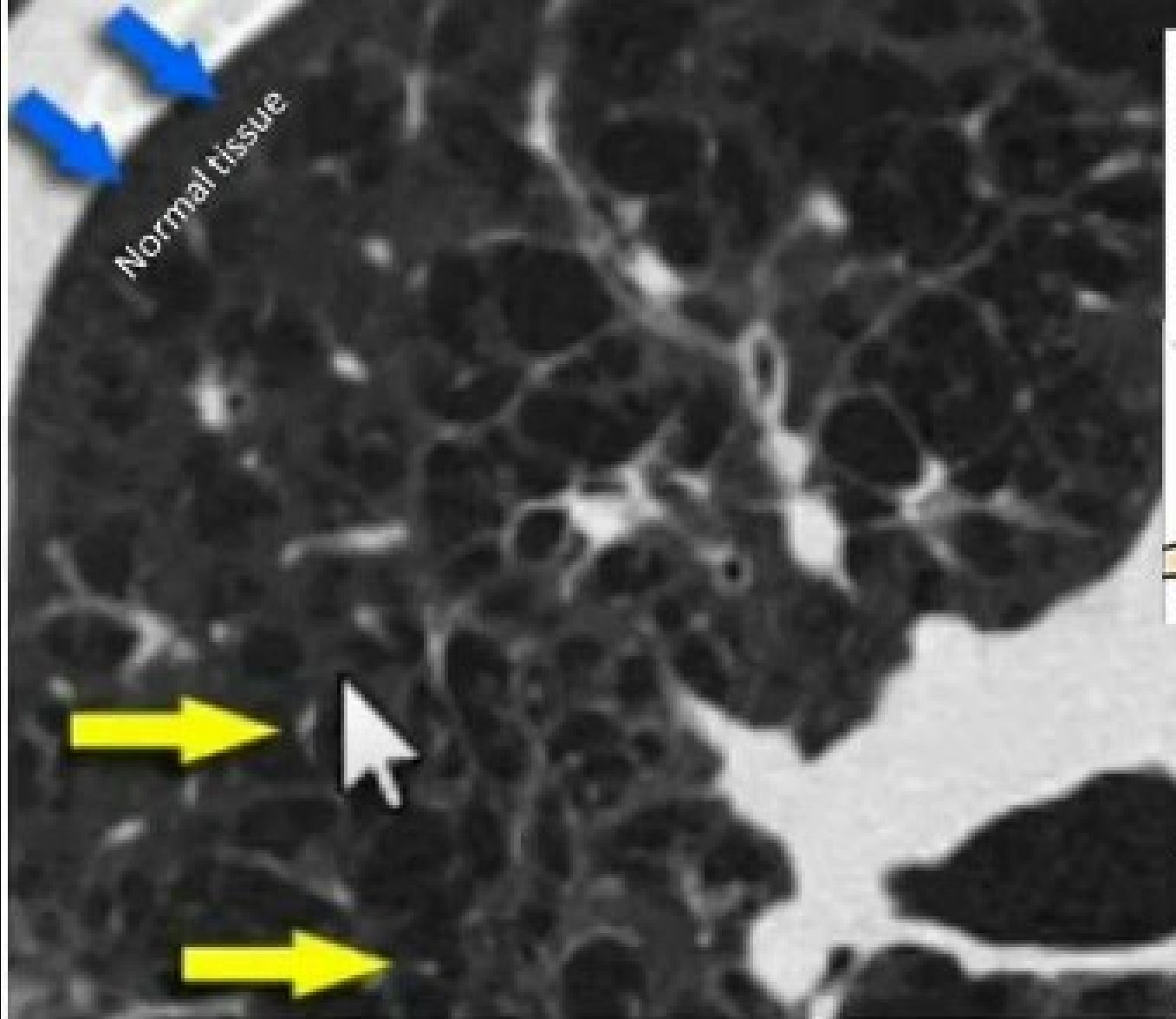
Treatment

- ① **Decreasing any proinflammatory stimuli** in the alveolus, including smoking, asthma, or respiratory infection.
- ② Pneumonia and annual influenza vaccines will help prevent respiratory infections.
- ③ Early antibiotic therapy for all exacerbations with purulent sputum.
- ④ Alpha1-antitrypsin-deficient individuals who have or show signs of developing significant emphysema can be treated with **Prolastin**, a purified, human plasma protein concentrate replacement (IV) for the missing enzyme.

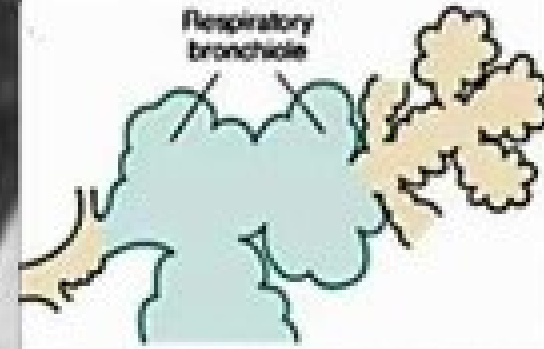
Testing is now underway to investigate direct application of Prolastin in the lungs by inhalation.

Note:





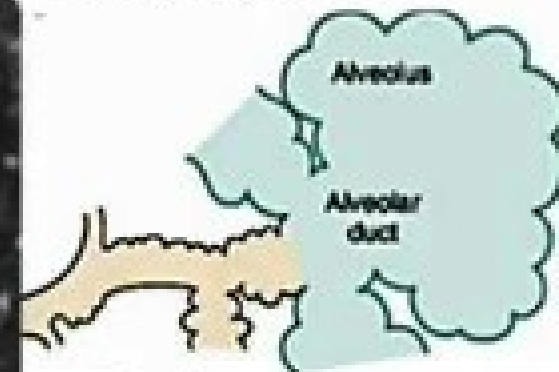
**Centrilobular
emphysema
due to
smoking.**

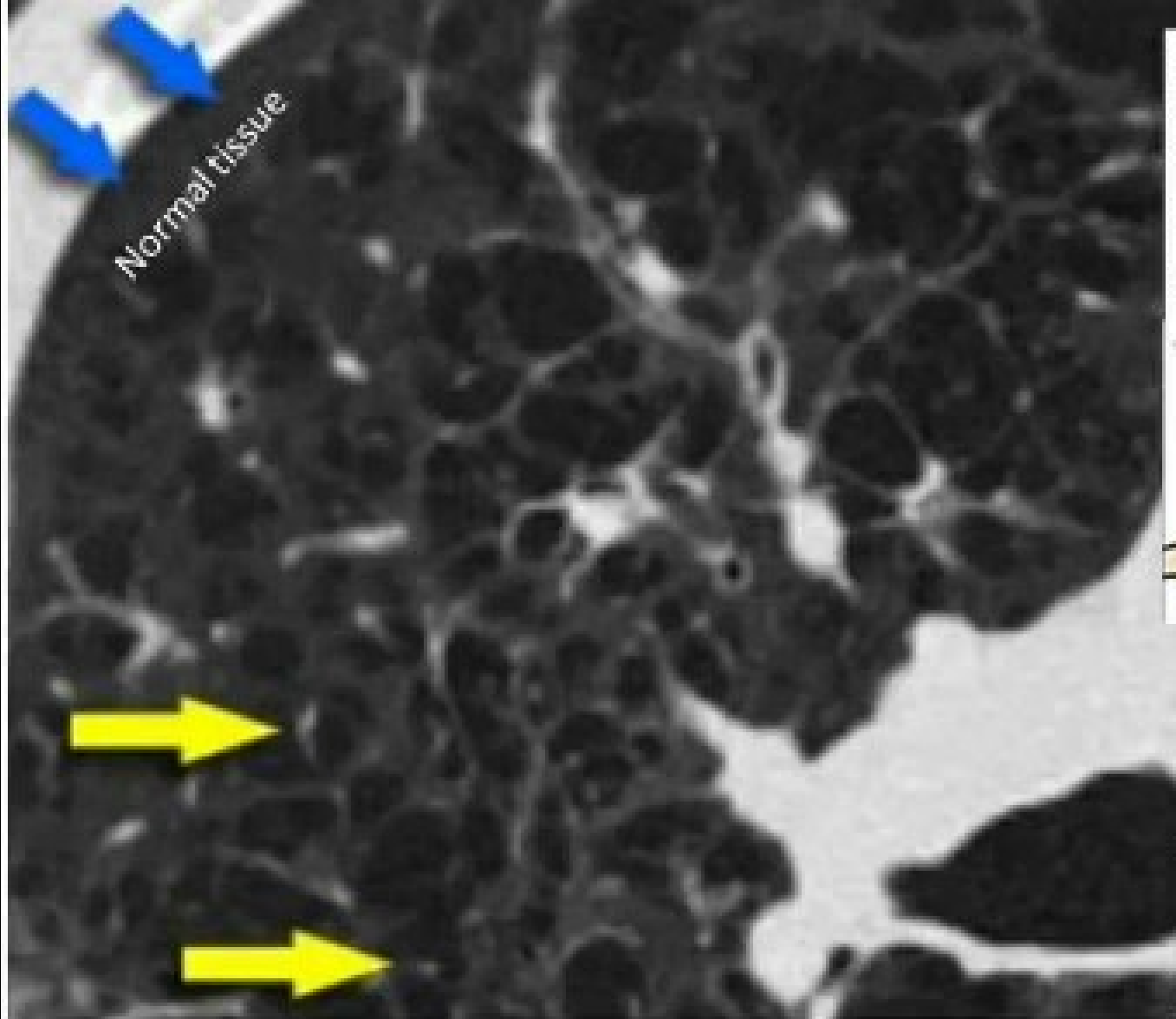


The periphery of the lung is spared (blue arrows). Centrilobular artery (yellow arrows) is seen in the center of the hypodense area.

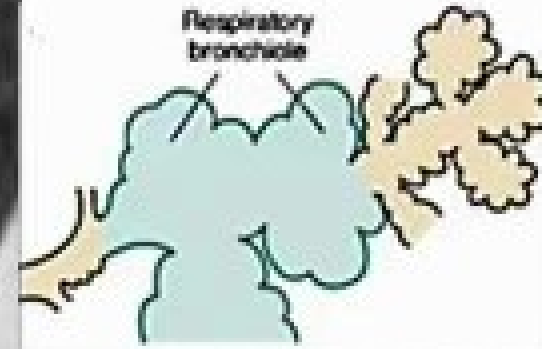
α -1 antitrypsin deficiency patient.

Panacinar emphysema



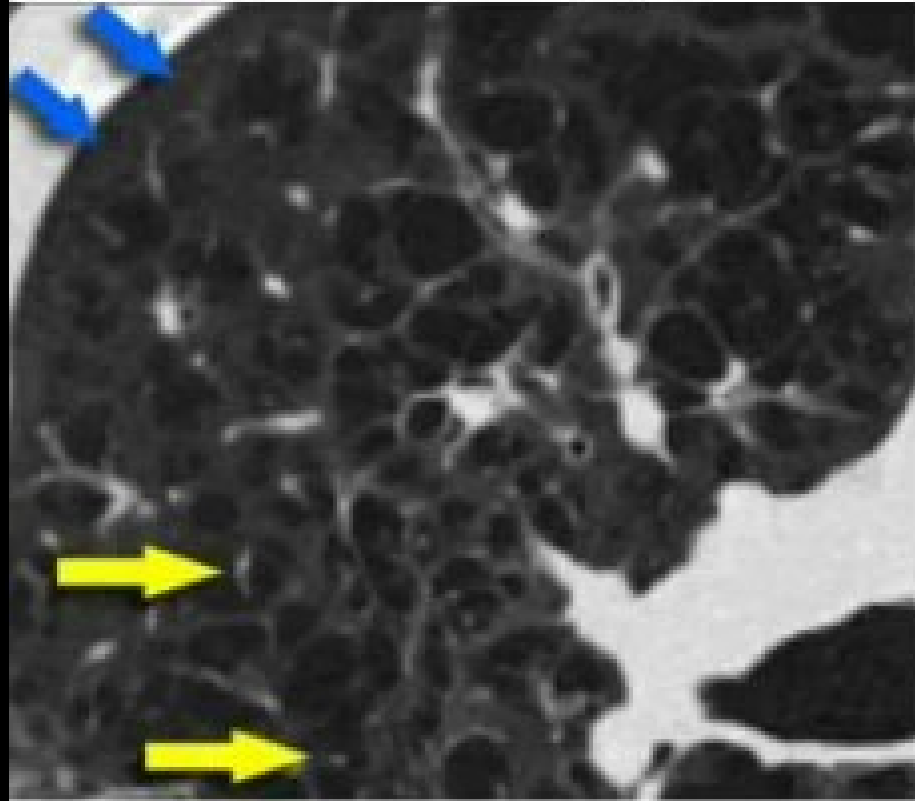


**Centrilobular
emphysema
due to
smoking.**



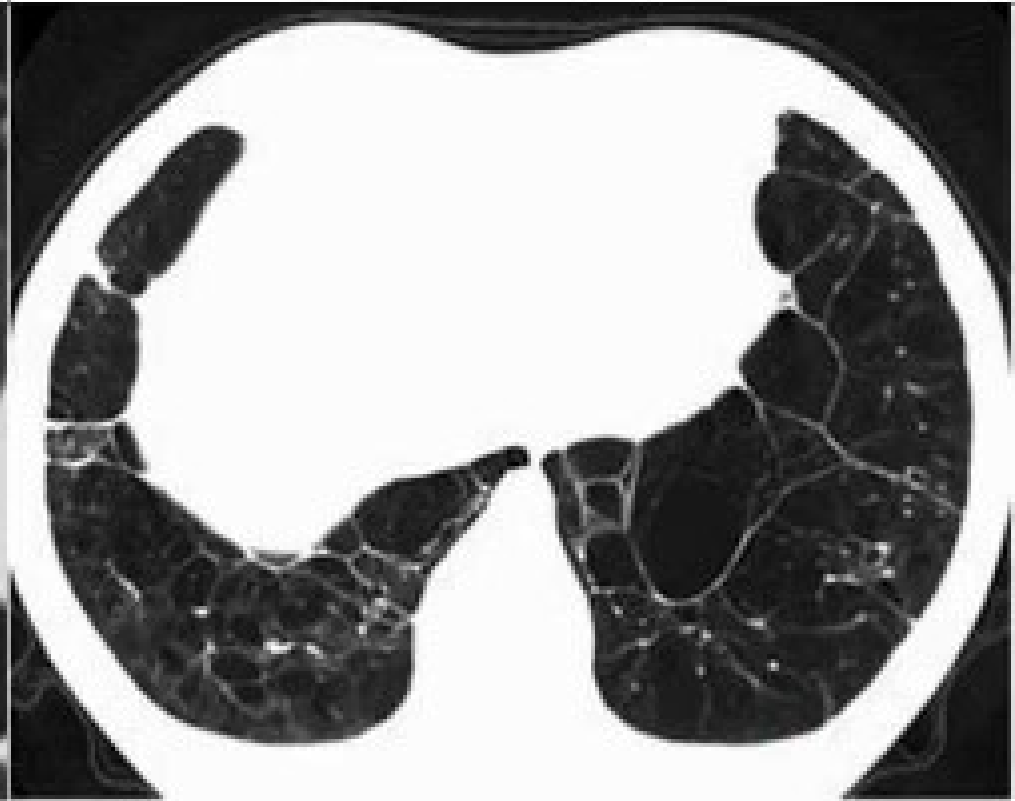
The periphery of the lung is spared (blue arrows). Centrilobular artery (yellow arrows) is seen in the center of the hypodense area.

Centrilobular emphysema

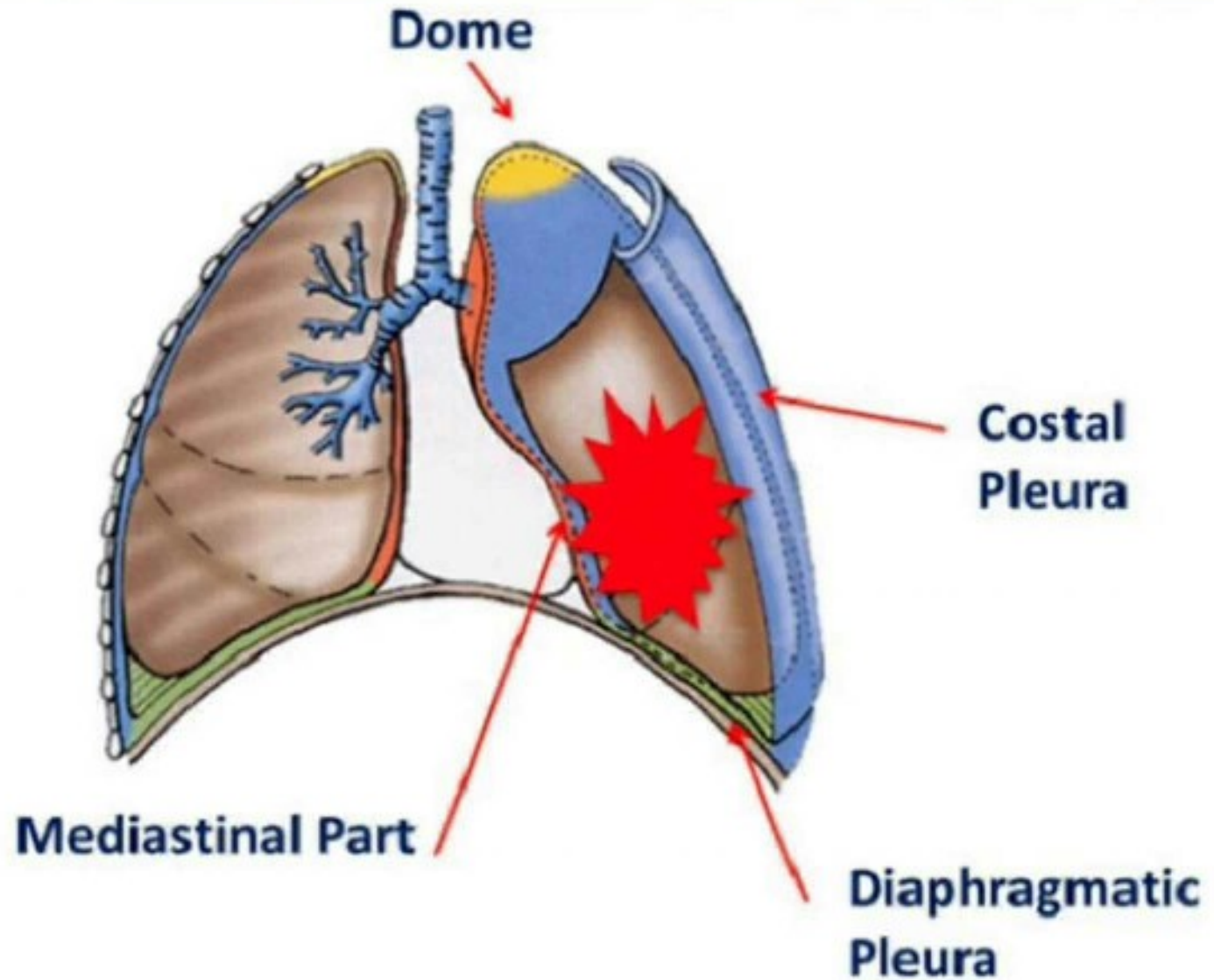


Smoking

Panacinar emphysema

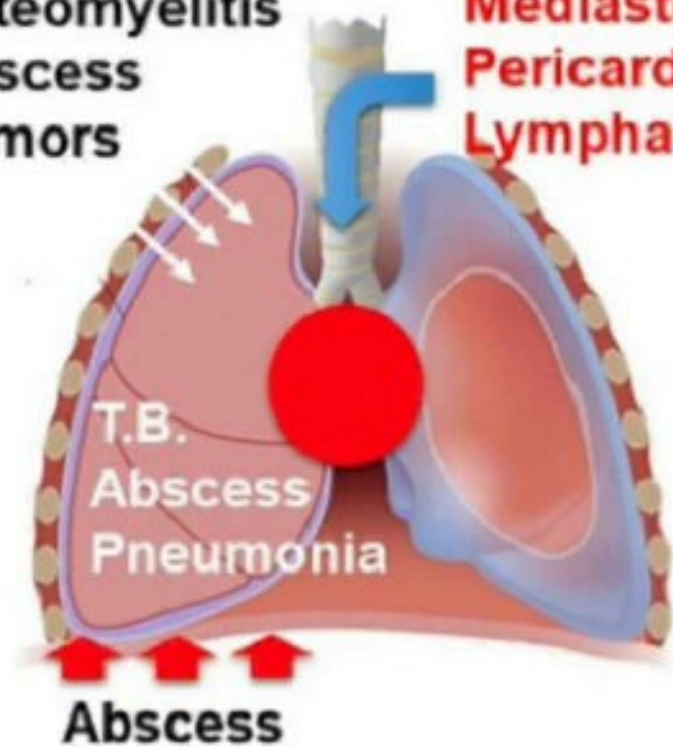


α -1 antitrypsin deficiency patient



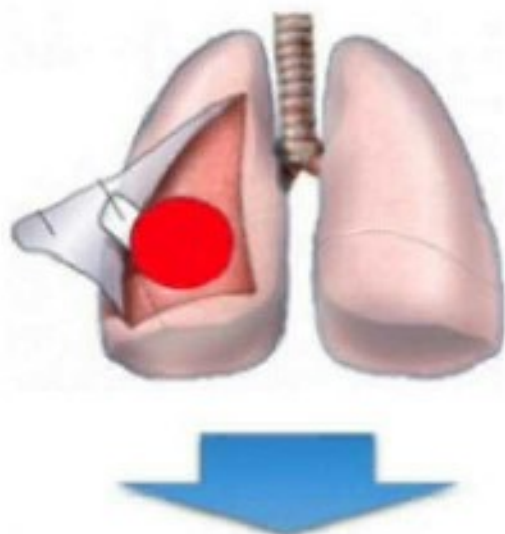
Definition

A form of pleural inflammation that could be caused by a variety of conditions and is characterized by localized and sharp pain in the chest.



Clinical Picture

Pain



Cough



Pleural Rub



Site: localized

Type: Stitching

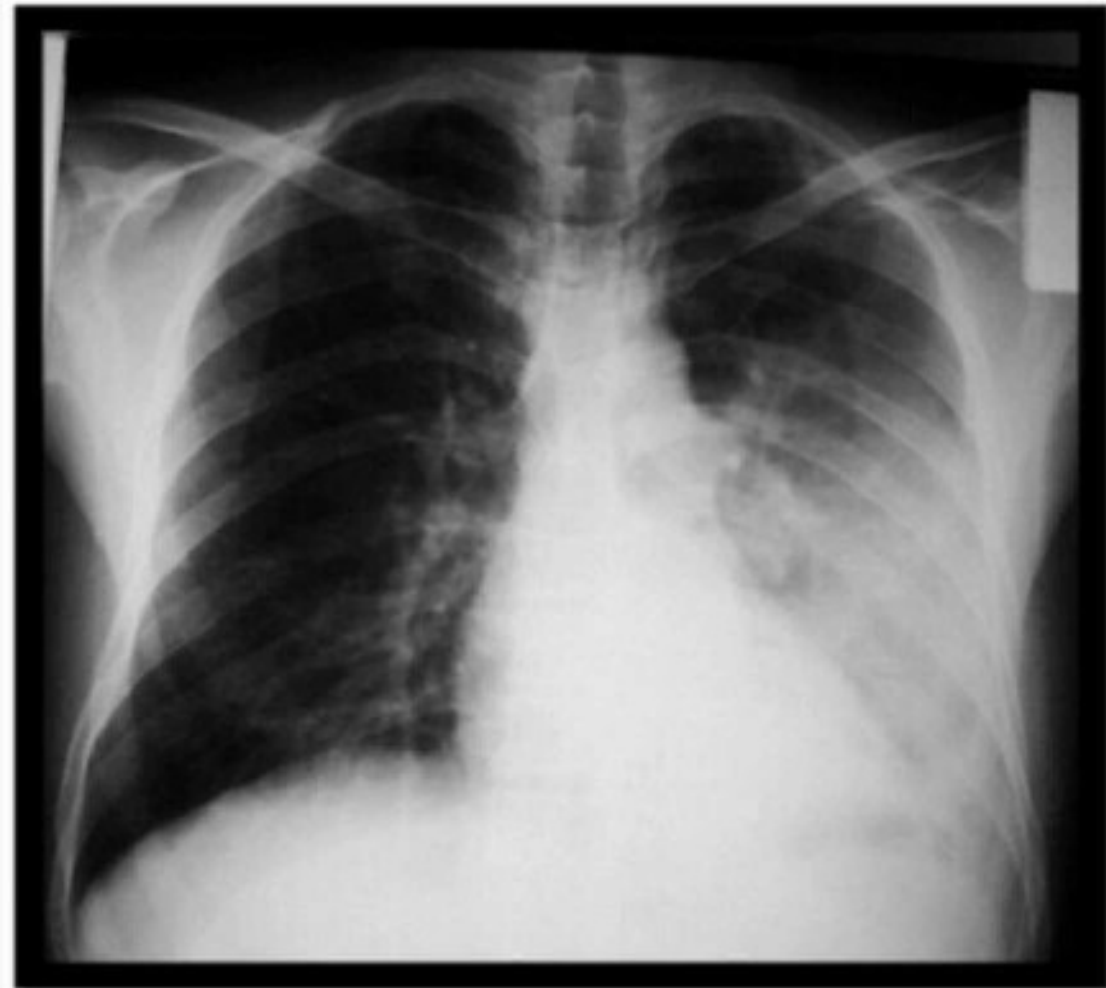
Radiation: Do not radiate except in basal pleurisy (epigastrium and Left shoulder)

Increase by: Inspiration-Cough- Strain

Decrease by: Holding respiration or Fixing the affected side (Patient prefer to sleep of the affected side)

Special Investigations

Mainly for secondary causes (if suspected)



Pneumonia

Special Investigations

Mainly for secondary causes (if suspected)



Pulmonary tuberculosis

Special Investigations

Mainly for secondary causes (if suspected)



Lung abscess

Treatment

① **Analgesics** (such as Indomethacin)

② **Codeine**

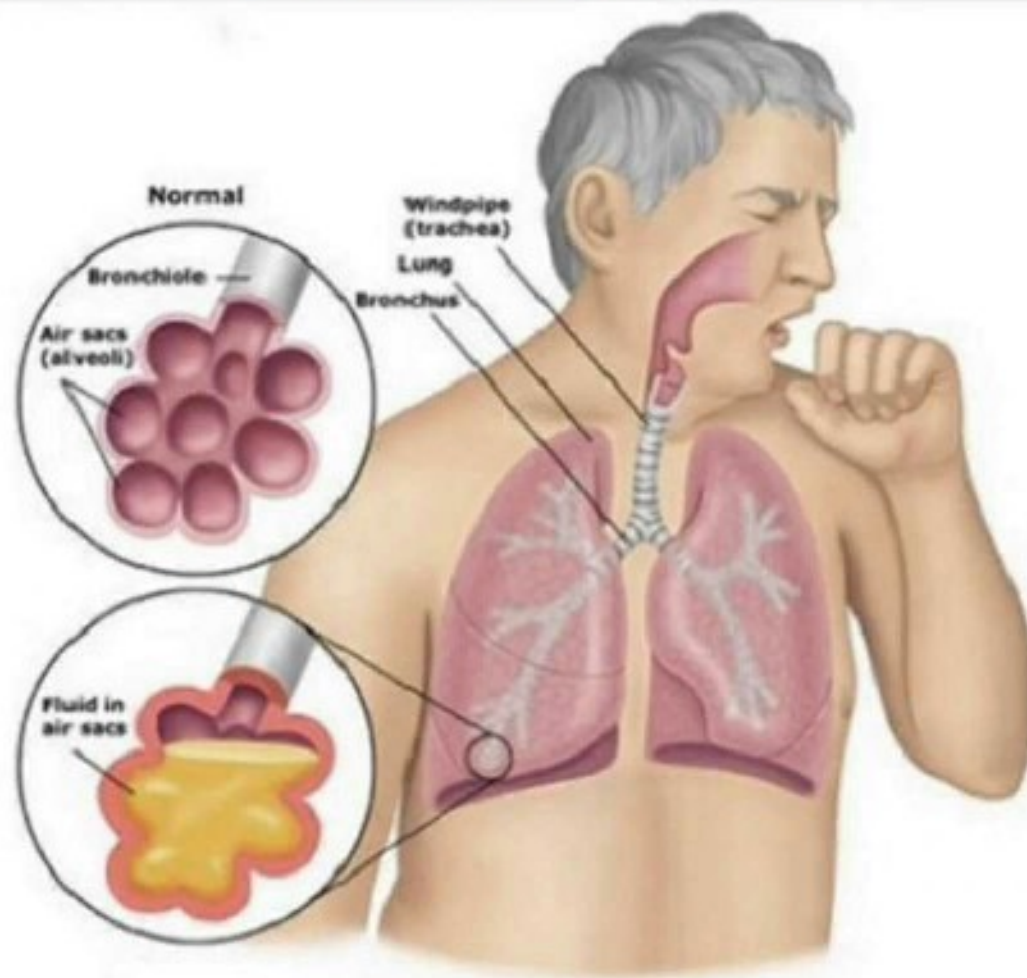
To suppress the irritative cough if retention of airway secretions is

NOT a likely complication

③ **Nerve block** may be needed in some cases to control the pain



Basic Information



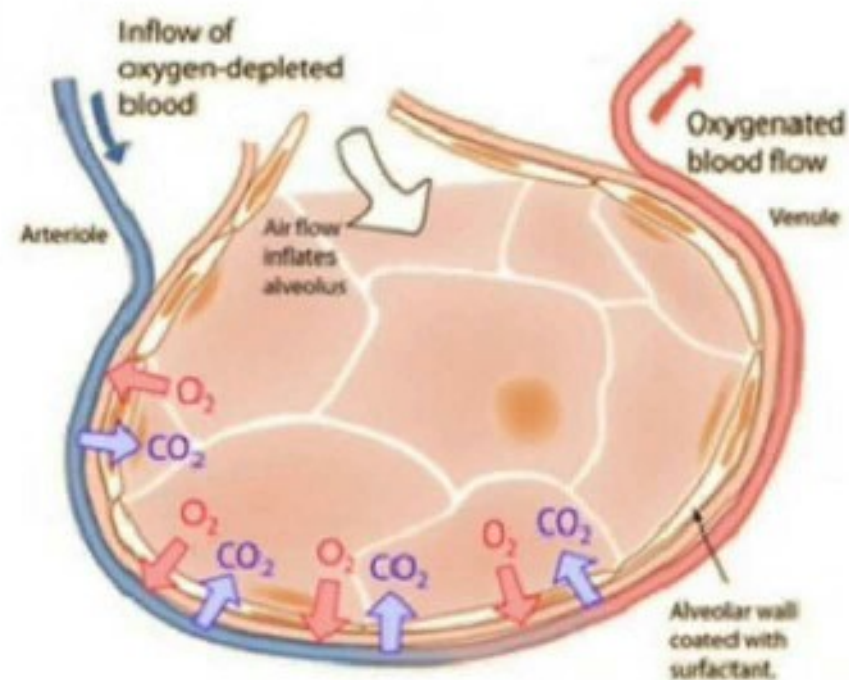
Treatment

- ① Proper antibiotic treatment
- ② Adequate analgesia
e.g. Codeine PO4 tablets
- ③ **Avoid** aspirin as it may interfere
with proper temperature
evaluation
- ④ Humidified Oxygen by mask
for associated Hypoxemia
- ⑤ Fluid and electrolyte balance
(1/2 Saline is given as fever causes loss of $H_2O > Na$)



Definition

An inflammatory condition affecting the alveoli.



Aetiology

The condition is typically caused by 'Microbial agents' such as Bacterial infections-Viral Infections-and Mycoplasma.

Predisposing Factors

- ① Loss of cough reflex : Coma- Anesthesia- Neuromuscular disease.**
- ② Injury to the Mucociliary apparatus e.g. Cigarette smoking- Viral diseases- Immotile Cilia Syndrome (associated with Infertility)**
- ③ Inhibition of the phagocytic activity in the lung: e.g. Alcohol- D.M.- Immunosuppression**
- ④ Pulmonary congestion e.g. LSHF**
- ⑤ Stasis of lung secretions e.g. Cystic Fibrosis**

Clinical Picture

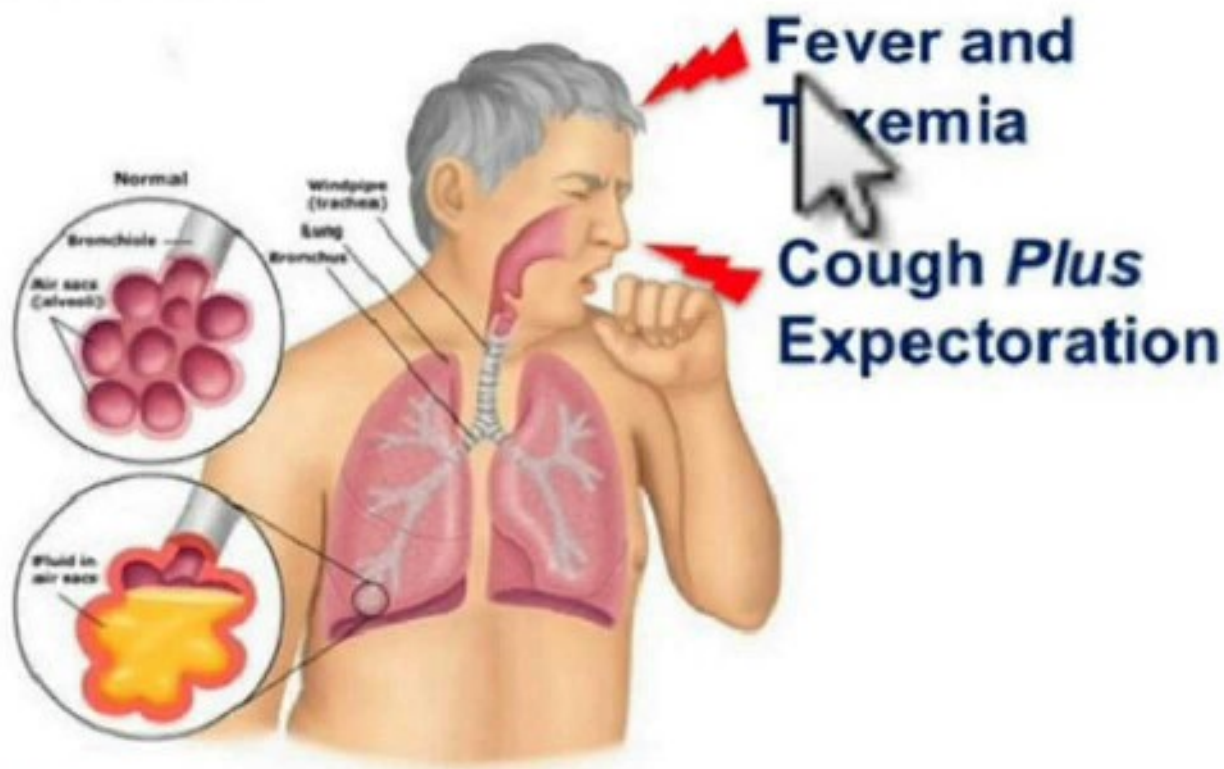
**Pleuritic
Chest
Pain**

**Lung
consolidation**

**Crackles
Bronchial
Breathing**

 **Dullness**

 **TVF (VR)**



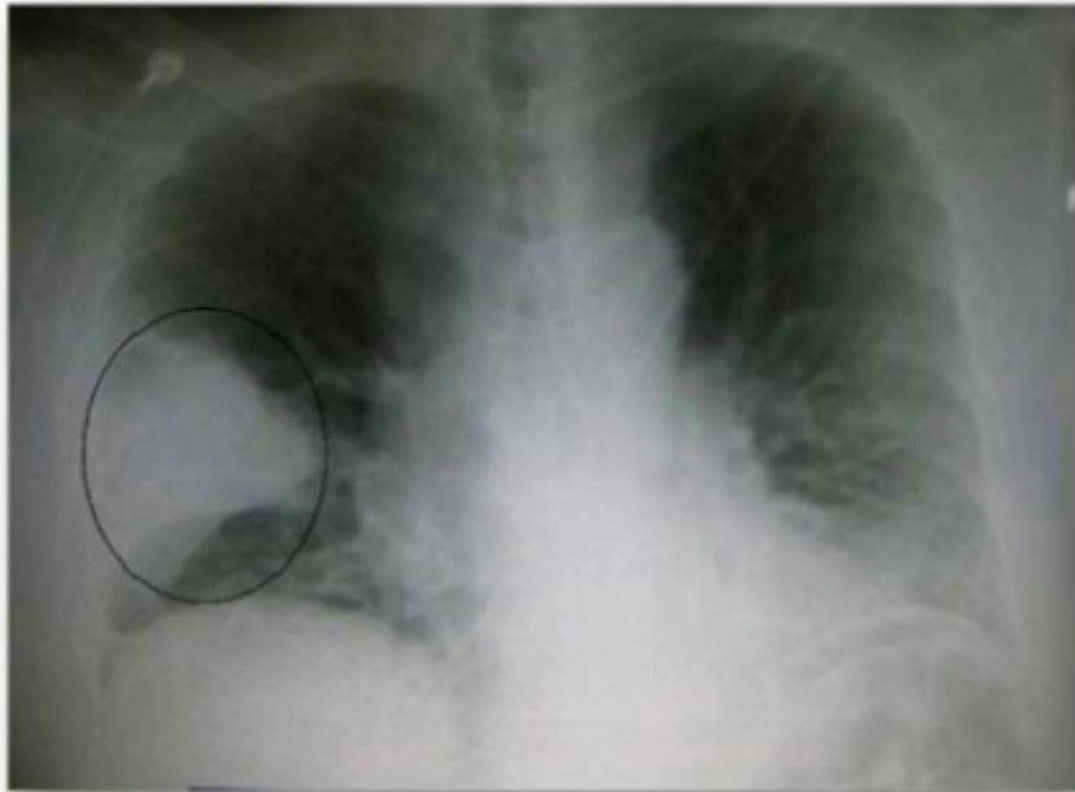
Lung abscess

Septicemia

**Respiratory
Failure**

Special Investigations

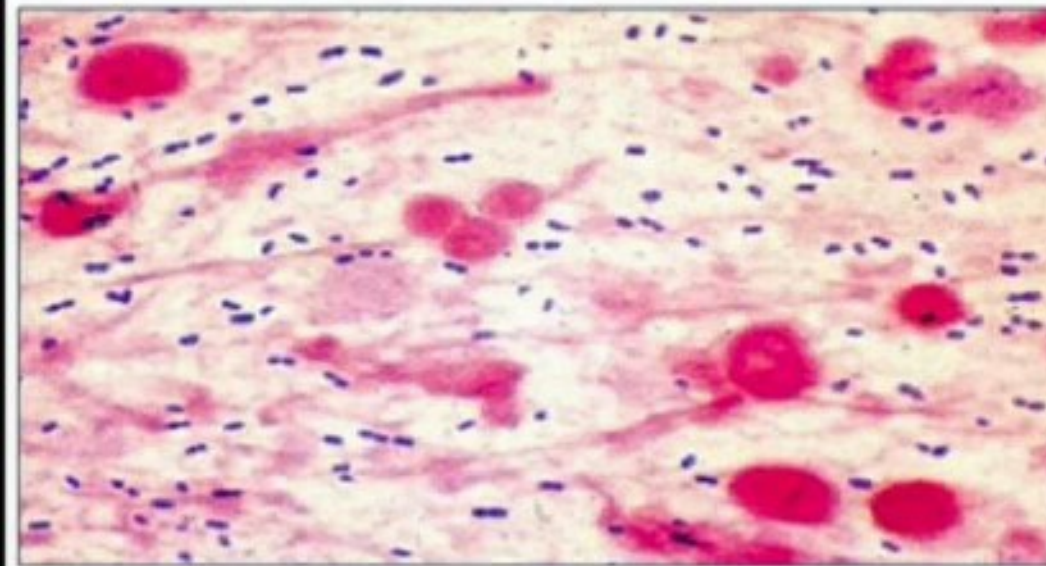
X Ray



**Parenchymal
Infiltration**

Special Investigations

Sputum



Gram Stain smear
(Pneumococcal
Pneumonia)
Gm +ve
Diplococci

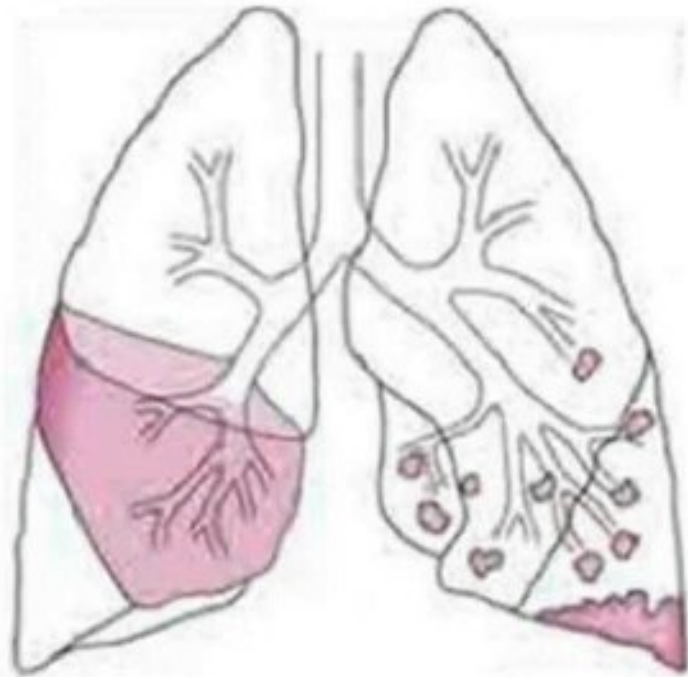
Special Investigations

Blood Culture



**May reveal
the organism**

Local Examination:



e.g. Lobar pneumonia

① **Inspection:** Normal

② **Palpation:**

Trachea: Central

Mobility: Limited

TVF: ↑ ↑ ↑

③ **Percussion:** Dullness

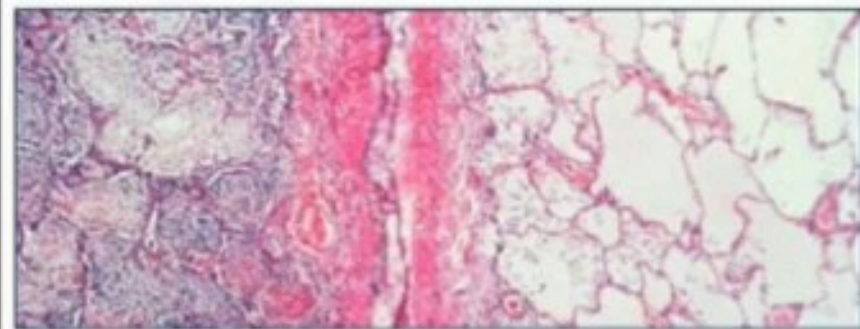
④ **Auscultation**

Normal Sounds

Bronchial breathing

Added Sounds

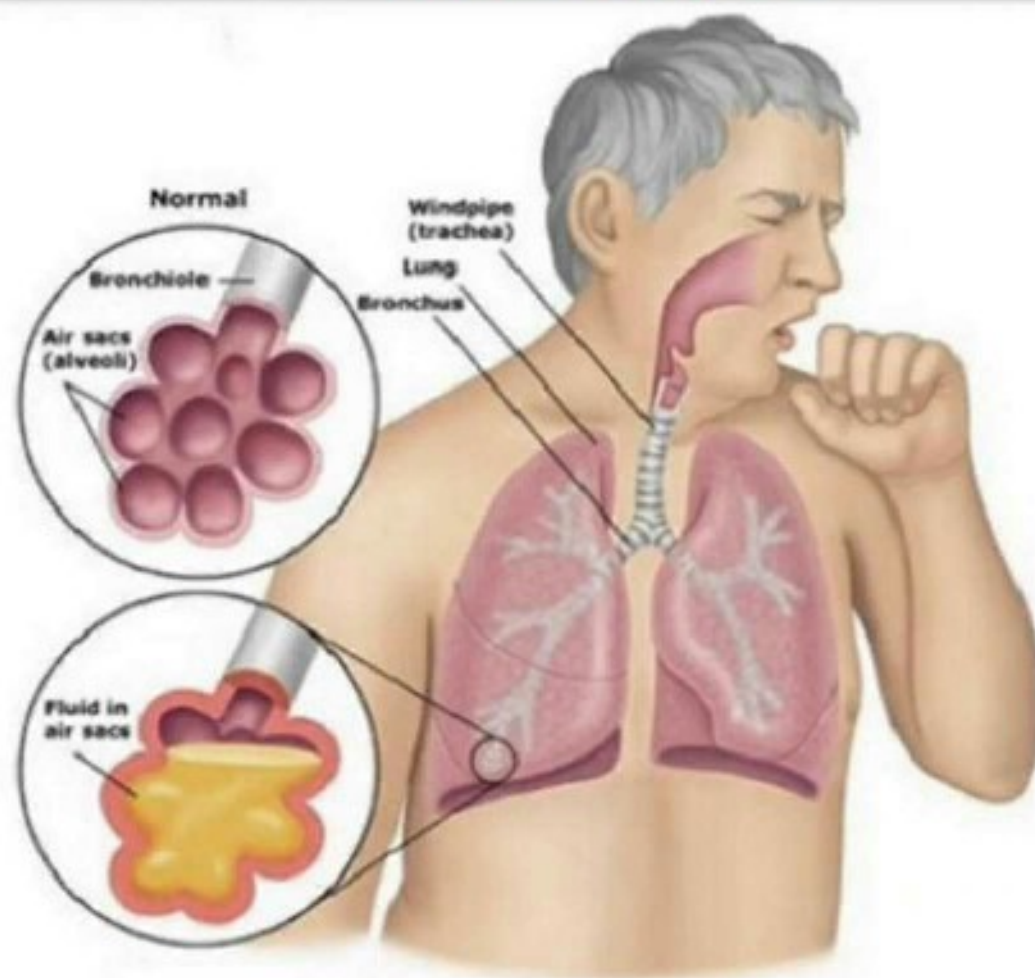
Crackles (Inspiratory crepitations)



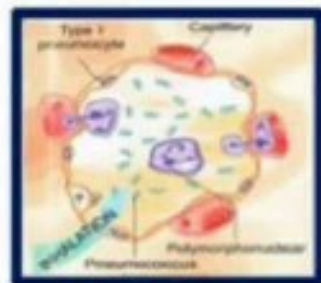
↑
Consolidation

↑
Normal

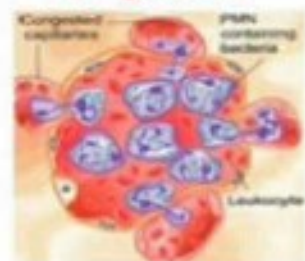
Main Types



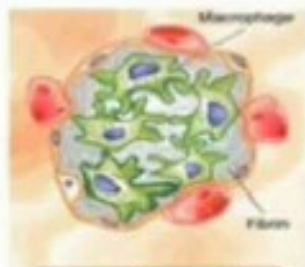
Pneumococcal Pneumonia



Congestion



Red hepatisation



Grey hepatisation



Resolution

① Four stages:

Congestion- Red hepatisation-
Grey hepatisation- Resolution

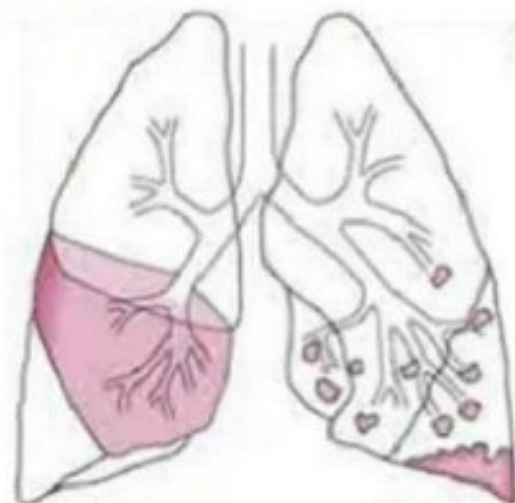
② Lobar in Distribution

③ If Recurrent:

Same Lobe: Local lung disease

Different lobes:

Debilitating general condition such as: DM- Immune
Deficiency- and SCA

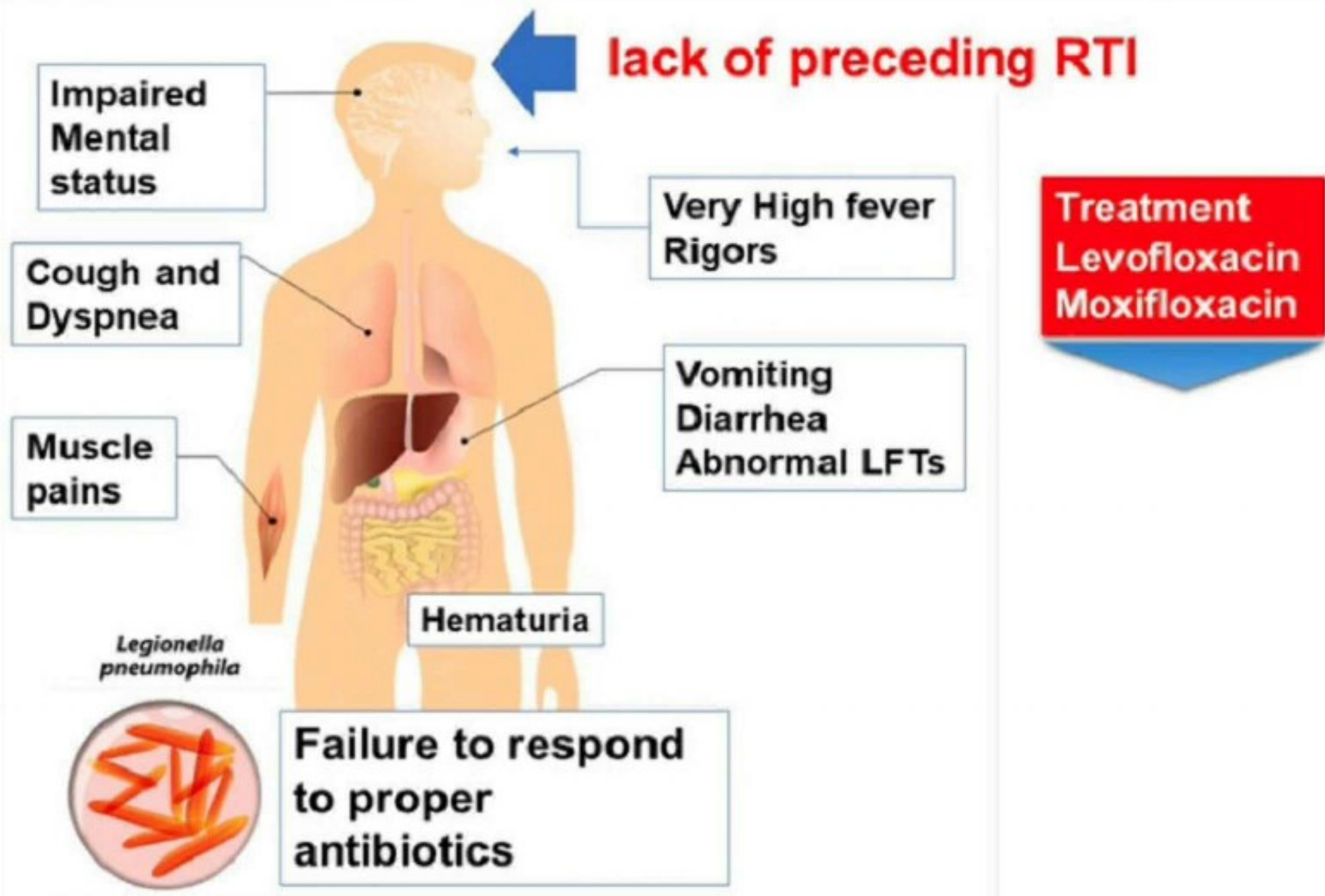


Legionnaires' disease

- ① Very high fever and rigors
- ② **lack of preceding RTI**
- ③ Diarrhea
- ④ Impaired mental functions
- ⑤ Hematuria
- ⑥ Abnormal LFTs
- ⑦ Negative bacterial Cultures
- ⑧ Failure to respond to proper antibiotics
- ⑨ Legionella soluble antigens in Urine
- ⑩ Elevated antibody titer against the organism
- ⑪ Culture on BCYE media
- ⑫ **Treatment by:**
Levofloxacin or Moxifloxacin

Outbreaks have been associated with exposure to aerosol-producing devices.

Legionnaires' disease



Mycoplasma Pneumonia

Fever More than 39 Degrees Centigrade- Headache-GCS

URT Symptoms- Bullous Myringitis -Skin Rash

Severe debilitating paroxysmal cough

Burning chest pain

Pharyngeal Infection

Rales NOT impressive while lung infiltration is ++++++

Bullous Myringitis



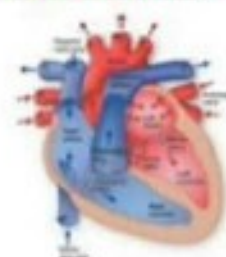
Raynaud's Phenomenon



RBCs



Myocarditis



Aseptic Meningitis



Arthritis



+++ Cold agglutinins

+++ Antibodies against the organism

Treatment by: (**NOT** Penicillin)

Macrolide

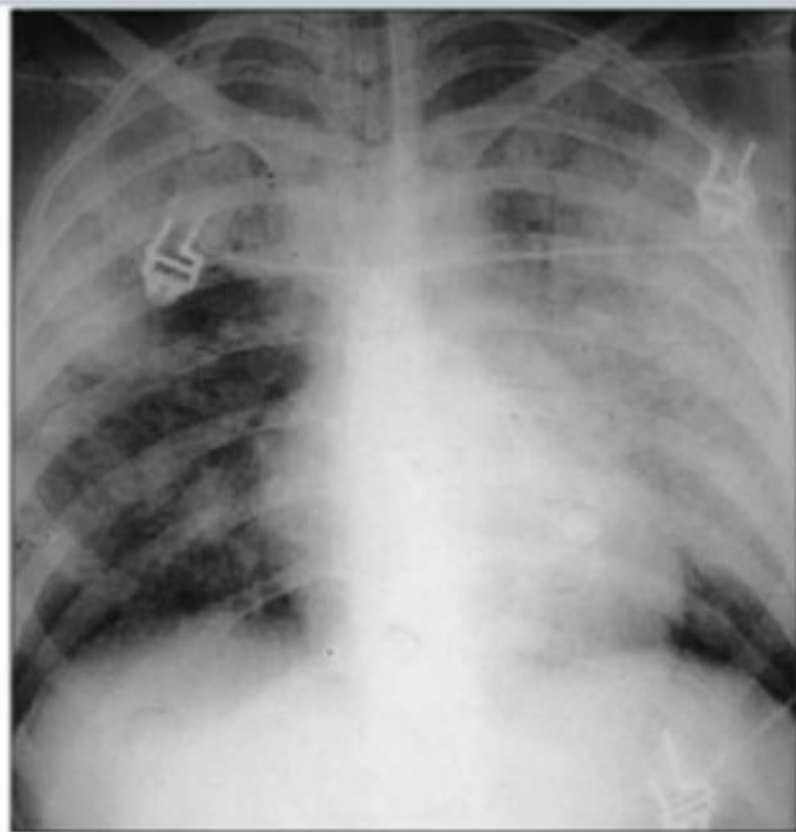
Tetracycline

Fluoroquinolone

Pneumocystis Carnii

- 1- Pneumocystis jiroveci organism (formerly known as P. carinii).
- 2- In patients with AIDS
- 3- Fever, cough, shortness of breath present in almost all cases
- 4- Lungs frequently clear to auscultation
- 5- Spontaneous pneumothorax
- 6- Elevated LDH in the majority of cases
- 7- HIV antibody test
- 8- Treatment by
Trimethoprim-sulfamethoxazole
Pentamidine *PLUS* prednisone

Hemoptysis & Extrapulmonary involvement: **NOT common**



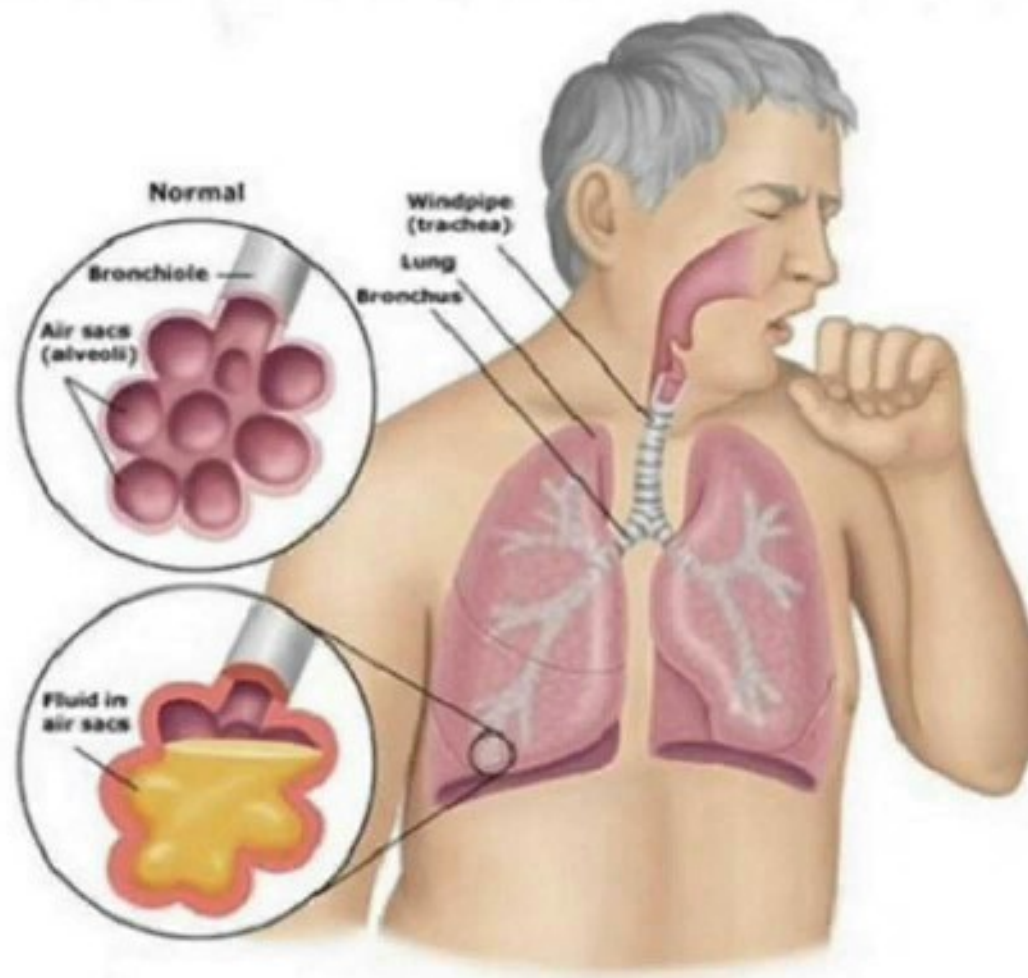
Klebsiella

- ① **Mostly in people with a impaired immunity** e.g. middle-aged and older men with debilitating diseases, diabetics, alcoholism, malignancy, liver disease, COPD, glucocorticoid therapy, Renal Failure
- ② Increased tendency to develop lung abscess & cavitation.
- ③ Very high mortality rate



**In alcoholics:
Think of Klebsiella**

Selection of antibiotic therapy



Treatment of Pneumonia

Note:

The following are just general guidelines that are subject to change based on the medical situation.

Treatment of Pneumonia

**Young
Healthy
Adult**



**Doxycycline
(Vibramycin)**

Treatment of Pneumonia

**Following URTI OR In
patients with Chronic
Cardiopulmonary disease**



Penicillin G

Treatment of Pneumonia

- 1 Alcoholics
- 2 Diabetes Mellitus
- 3 General Debilitating Conditions



**Third generation
Cephalosporins**

Treatment of Pneumonia

**Associated structural
lung disease e.g.
Bronchiectasis**



**Antipseudomonal
penicillin
or Cephalosporin *Plus*
Aminoglycosides
(Gentamycin)**



Treatment of Pneumonia

**Patient with poor dental
hygiene ?!
(Aspiration pneumonia)**



Clindamycin

Treatment of Pneumonia

Exposure to air-conditioning system or water



**Erythromycin +
Rifampicin OR/
Azithromycin or
Quinolones**

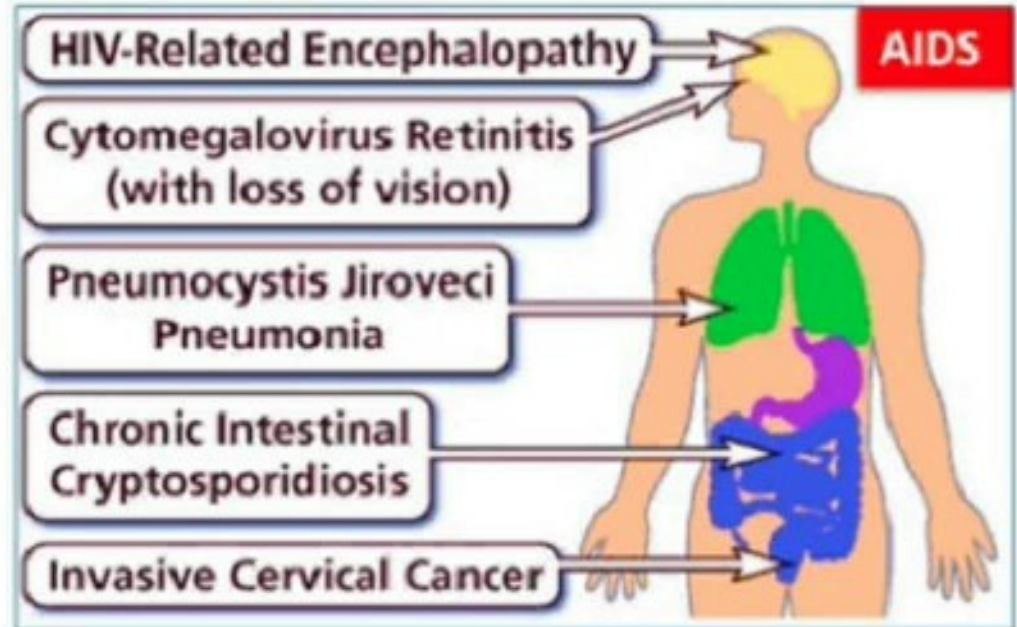


Treatment of Pneumonia

Immunosuppressed patient e.g. AIDS or Immunosuppressive Drugs

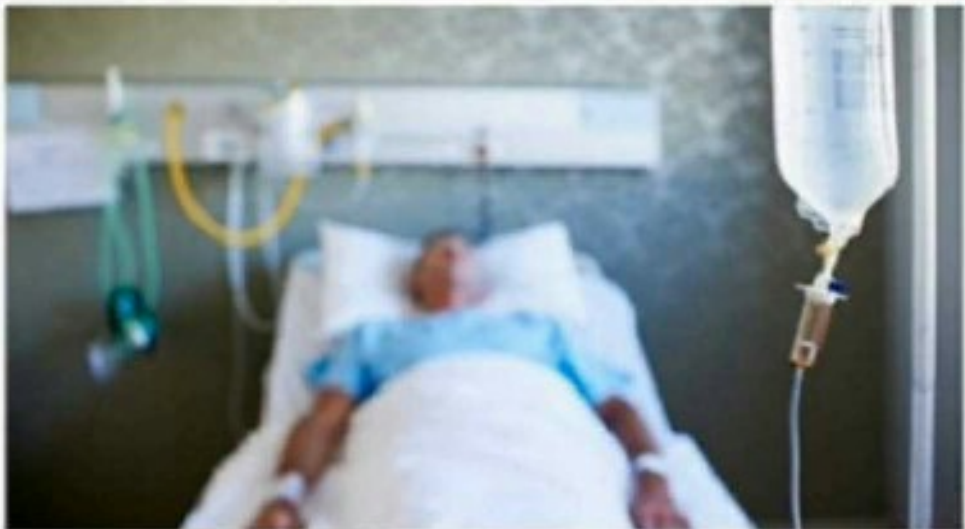


TMP-SMX



Treatment of Pneumonia

Hospital acquired pneumonia



Mild

3ed Generation Cephalosporin

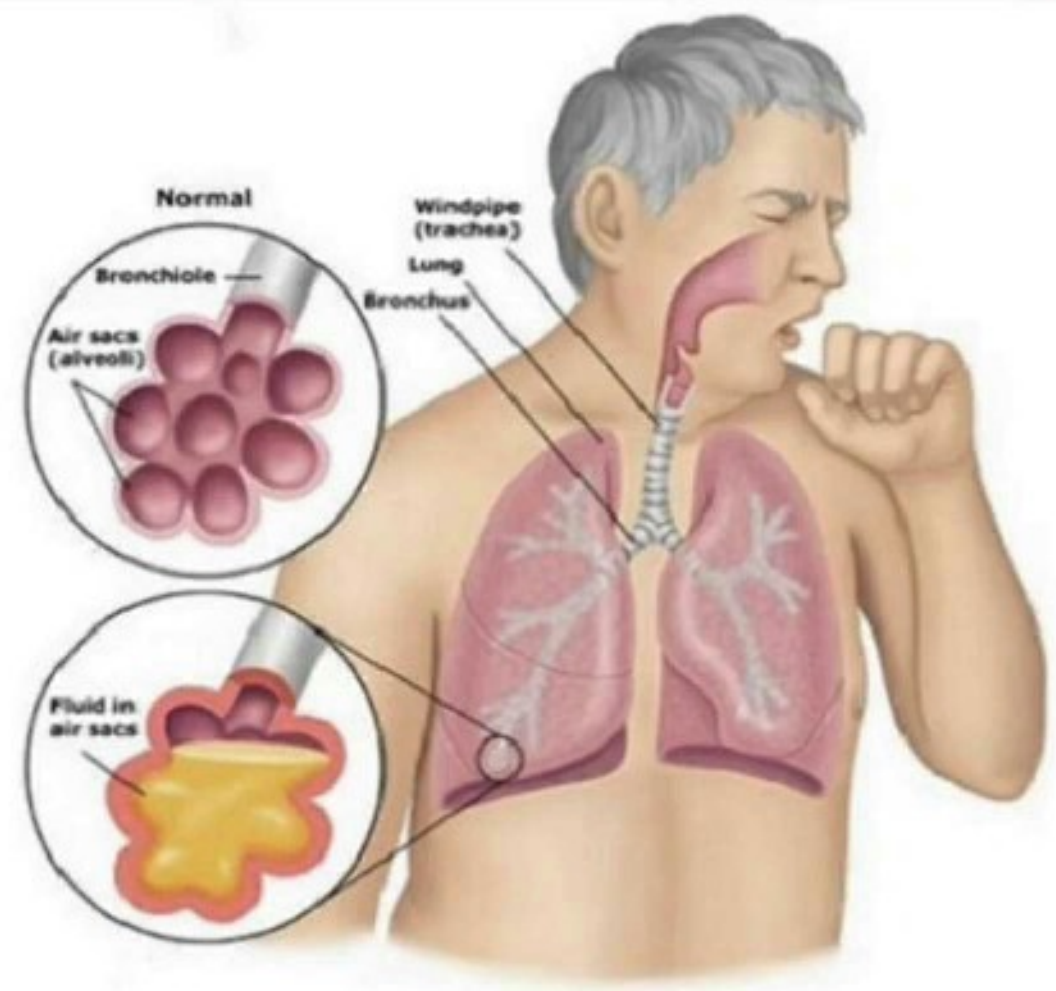
Severe

Aminoglycosides + Antipseudomonal penicillin or Cephalosporin

In ICU

Add: Vancomycin to the above treatment to cover Methicillin Resistant Staph

Important Points (A)



Rule VI

As a result: **Elderly patients with pneumonia** may present with

- ① Disorientation
- ② Confusion
- ③ Diarrhea (can be a prominent manifestation because of a nonspecific gastrointestinal response to circulating cytokines).



Definitions

Pneumonia is generally characterized by

- ① Acute onset of fever
- ② Cough often with sputum production
- ③ A newly recognized pulmonary infiltrate detected on a chest radiograph



Approach to therapy

Based on good evidence that outcomes are worse with prolonged delays.

Initial antibiotics should be given as soon as the diagnosis of pneumonias considered likely



Rule 1

Fever, cough, and sputum production **without an infiltrate is called **acute bronchitis**.**



In persons who **Do Not have chronic lung disease, Acute Bronchitis is generally a self-limited viral illness**

Rule II

Persistent cough of several weeks' duration **without** fever or sputum suggests pertussis or a post-viral infection syndrome due (e.g. Adenovirus).

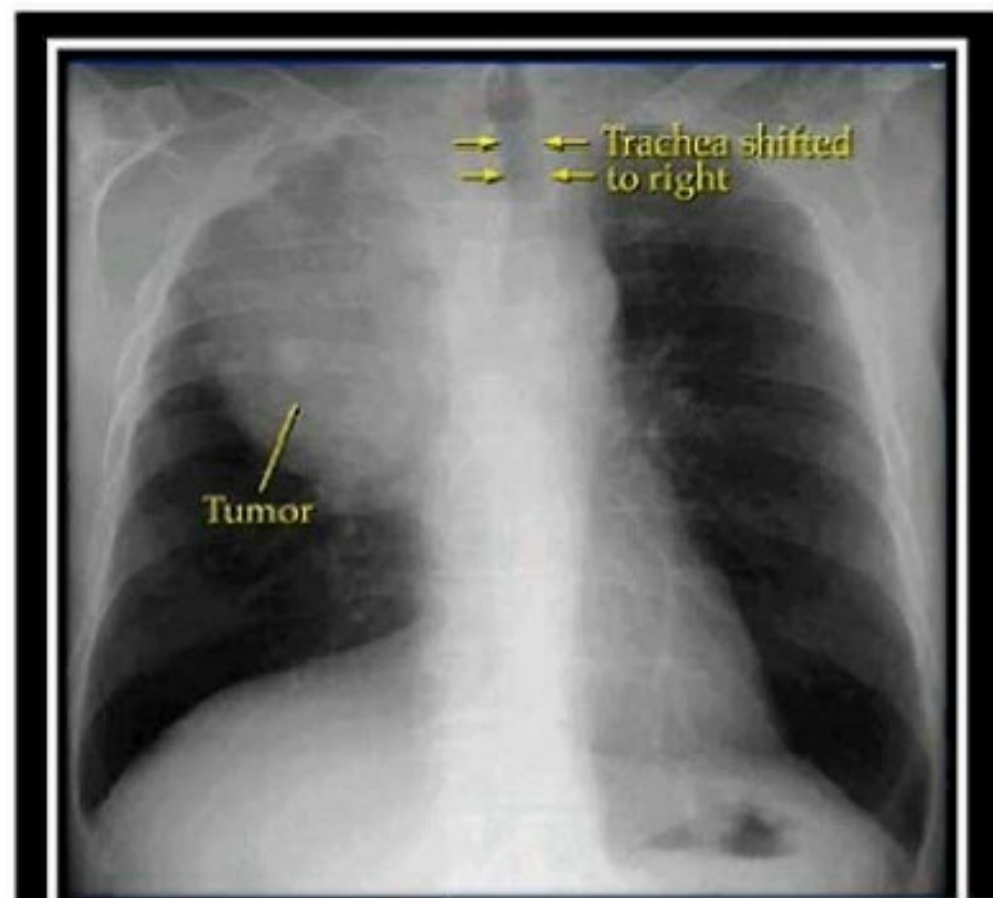
Rule III

Tuberculosis should be **suspected** in

- 1- Persons who have lived in endemic areas**
- 2- Patients who have served time in prison (or been homeless)**
- 3- Patients who are Immunocompromised (especially patients with AIDS).**

Rule IV

Community acquired pneumonia distal to lung cancer is often associated with weight loss and cavitory lesions.



Rule V

In Young adults who have bacterial pneumonia, acute severe malaise and fever are common, often with chills, cough, and sputum production. Some patients also have pleuritic chest pain. When sputum is produced, it may be tinged with blood.

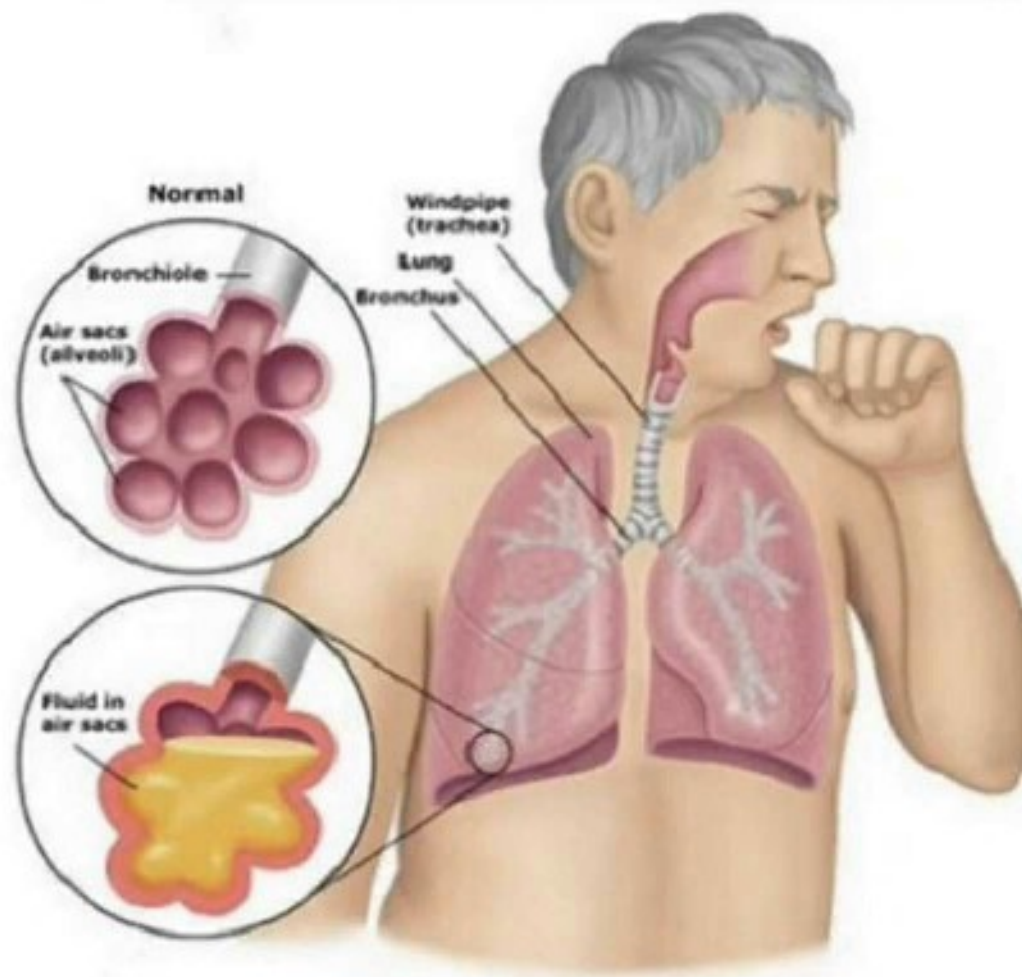


Rule VI

**With advancing age
Patients are more likely
to have only some or
even few of the
previous specific
manifestations
of pneumonia (In part
because they produce
lower levels of
cytokines and may
exhibit a less vigorous
response to them).**



Important Points (B)



Specific conditions

Viral pneumonia is more likely to present with **upper respiratory symptoms** such as rhinorrhea or a sore throat and a dry cough. Patients often recall being exposed to someone with a respiratory infection.

Specific conditions

Pneumococcal pneumonia

Enzyme-linked immunosorbent assay (ELISA) can detect pneumococcal cell wall or capsular polysaccharide in the urine of 60 to 80% of patients with pneumococcal pneumonia



Specific conditions

Viral pneumonia is more likely to present with **upper respiratory symptoms** such as rhinorrhea or a sore throat and a dry cough. Patients often recall being exposed to someone with a respiratory infection.

Specific conditions

Pneumococcal pneumonia

Most patients with bacterial pneumonia have a WBC count higher than $11,500/\mu\text{L}$ at the time of admission to hospital

A low WBC count should not be interpreted as reassuring because WBC counts of $6000/\mu\text{L}$ or less may be seen in overwhelming bacterial infection. When overwhelming bacterial infection suppresses the WBC count, immature (band) cells are almost always elevated.

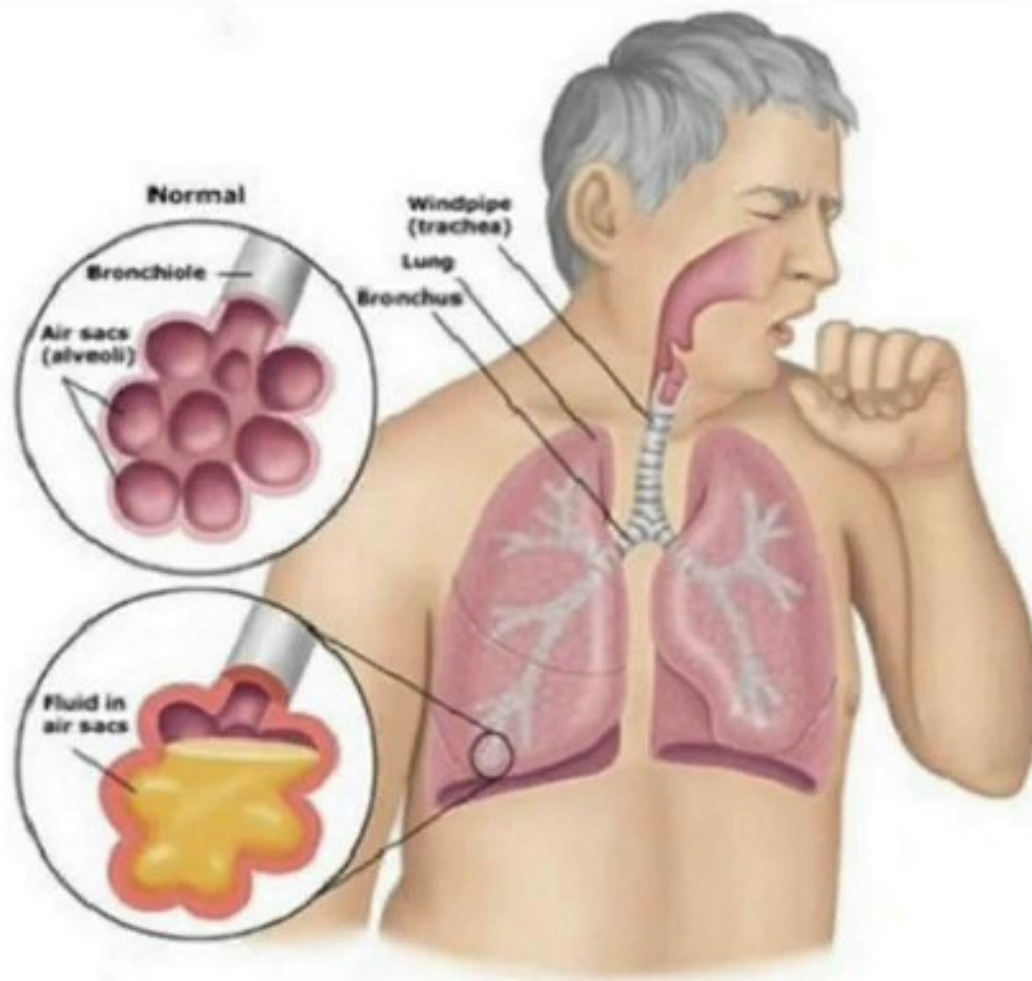


Specific conditions:

Legionella pneumonia have been associated with exposure to a variety of aerosol-producing devices, including showers.



Important Points (C)



Treatment



Treatment

For **empirical outpatient therapy**

Guidelines from the **Infectious Diseases Society of America and the American Thoracic Society**

recommends one of the following:

- 1 **Macrolide**
- 2 **Doxycycline**
- 3 A “respiratory” quinolone (**Levofloxacin** or **Moxifloxacin**
(but **NOT** Ciprofloxacin, which is thought to be slightly less effective against pneumococci)
- 4 A β -lactam + A Macrolide.

This approach covers common
Bacterial causes of pneumonias
PLUS Infections due
to *Mycoplasma* or *Chlamydia*

Treatment

In contrast, the **Swedish Society** of Infectious Diseases recommends outpatient treatment for acute pneumonia with **Oral Penicillin or Amoxicillin**.



Treatment

① In general, **Outpatients** with community-acquired pneumonia should be treated for **5 to 7 days**.

② Pneumonia due to **S. aureus** (or gram-negative bacilli probably requires 14 days of treatment.

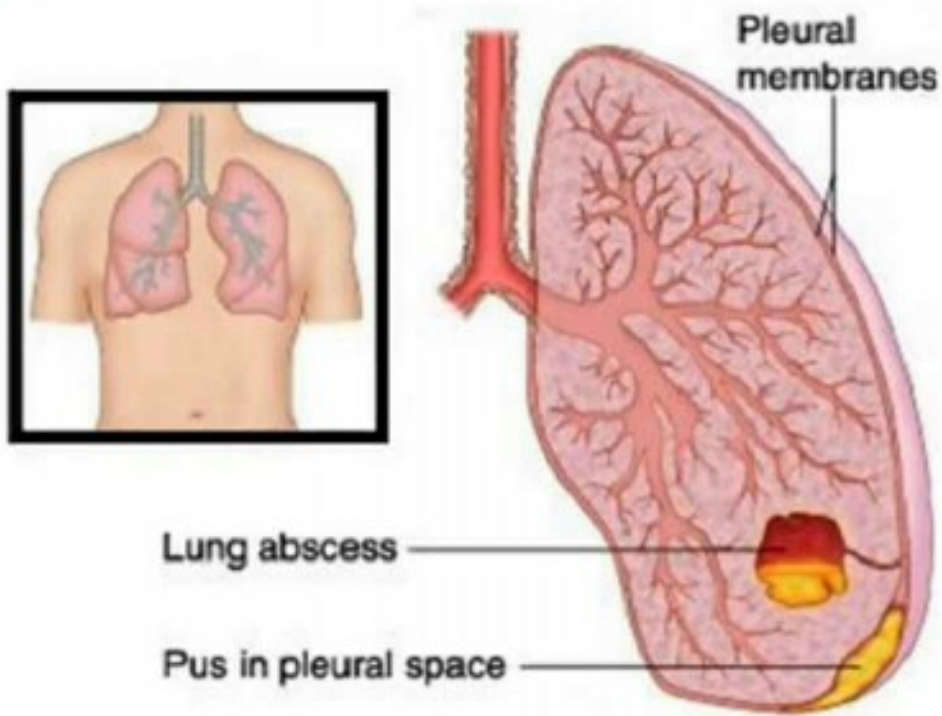
③ **Bacteremic S. aureus pneumonia** requires 4 weeks of treatment because of concerns regarding endocarditis (either as a cause or as a result of the pneumonia).



Treatment

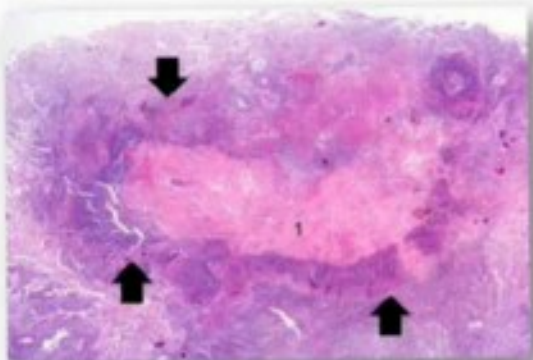
Whether **low-dose corticosteroid** treatment (e.g., 30 mg methylprednisolone daily) is beneficial in patients with community-acquired pneumonia, especially with more severe disease, is uncertain. However, **Steroids may reduce the risk of treatment failure, as well as the risk of the acute respiratory distress syndrome**





Definition

A localized suppurative inflammation of the lung which is mainly caused by Anaerobic Organisms



Aetiology

① Aspiration of oropharyngeal secretions

(PF: Coma-Anesthesia- epilepsy-
Neuromuscular Disorders affecting
swallowing e.g. MND-
Oropharyngeal Reflux-
Nasogastric tube- Gum Disease)

② Localized pneumonia

(Staph- Friedlander Pneumonia- Anaerobic organisms)

③ Septic emboli

④ Secondary infection in collapsed lung: e.g. Lung Cancer OR/ in
a cyst OR/ in infarcted lung tissue
e.g. Pulmonary Embolism & PAN.

⑤ Amoebic lung abscess



Clinical Picture

Expectoration

Big amount
Yellowish
Fetid (Bad odor)
Dependent Discharge

Toxemia

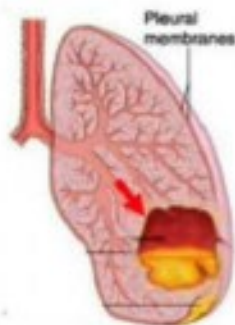
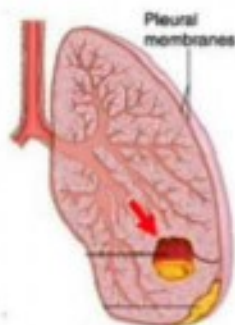
Anorexia
Weakness
Headache
Night sweats
Weight loss

Pleural Affection



Empyema

Clinical Picture



① **Inspection:** Normal

② **Palpation:**

Trachea: Central

Mobility: Limited

TVF (VR) : It depends on the location of the abscess

③ **Percussion:**

Dullness (if full)

Hyperresonance (if empty)

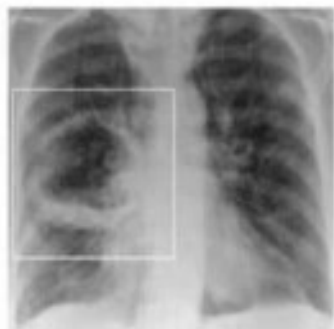
④ **Auscultation**

Normal Sounds: Bronchial breathing

Added Sounds: Crackles (from surrounding alveoli)

Special Investigations

X Ray Chest shows Lung cavitation



Treatment

- 1 Antibiotics (e.g. Clindamycin) until there is no symptoms and until the disappearance of all radiological signs.
- 2 This can take up to 6 weeks.
- 3 Initially antibiotics are given IV then orally.
- 4 The treatment of lung abscess is guided by the available microbiology



Clindamycin 600 mg IV q 6 to 8 h is usually the drug of choice because it has excellent activity against streptococci and anaerobic organisms.

The primary alternative is a combination **β -lactam/ β -lactamase inhibitor** (e.g., ampicillin/sulbactam 1 to 2 g IV q 6 h)



Definition

Autosomal Recessive disorder characterized by production of very viscid mucous secretions by the exocrine glands.

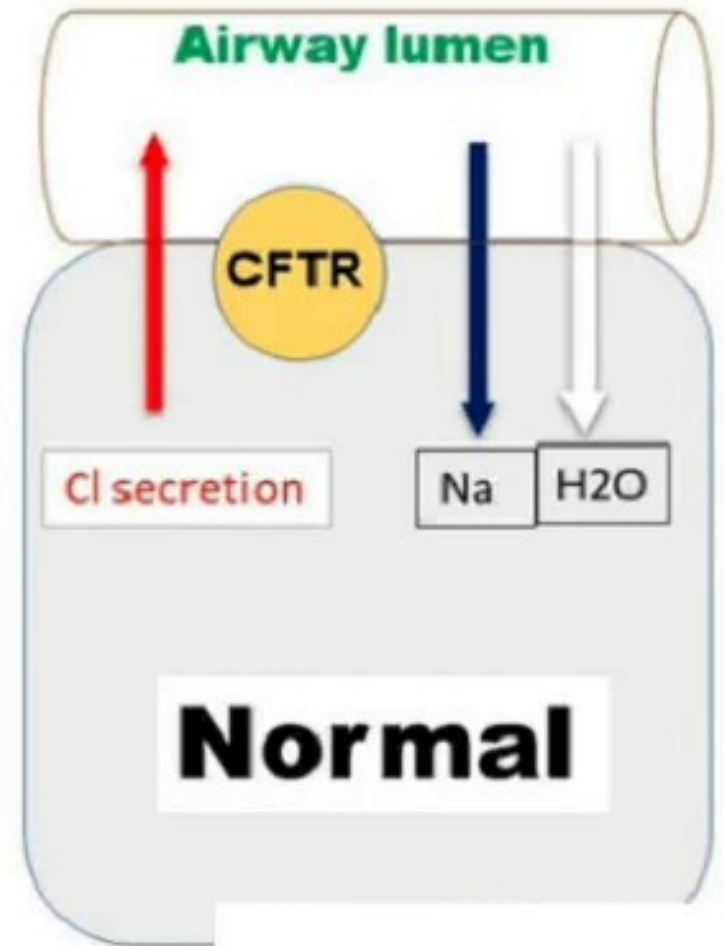
Aetiology

A defect in Cl⁻ Channels or the CFTR (Cystic Fibrosis Transmembrane Conductance Regulator).

Viscid Secretions

Obstruction

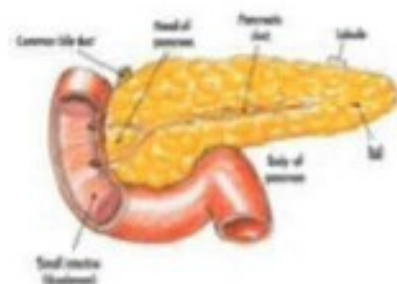
Secondary infection and damage to organs (Intense neutrophil-dominated inflammatory response)



Clinical Picture



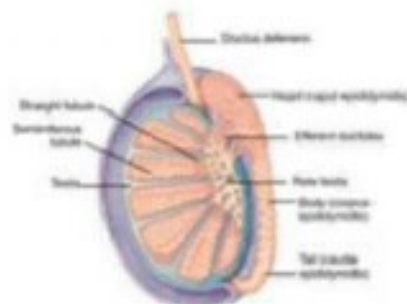
- ① Chronic recurrent cough and expectoration
- ② Dyspnea and wheezes
- ③ Recurrent chest infections with atypical organisms: Hemophilus Influenza- Staph aureus- Pseudomonas
- ④ Pneumothorax



Pancreatitis

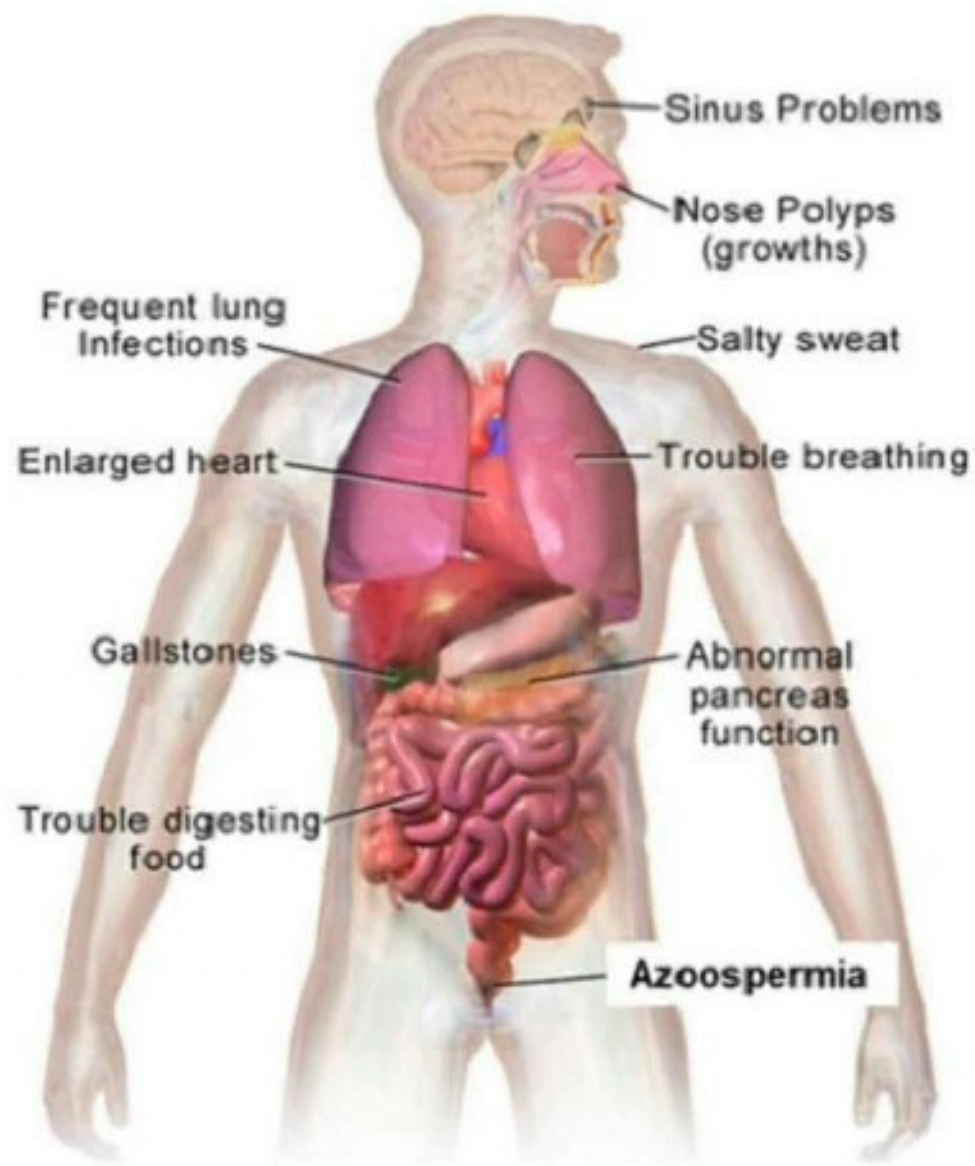


**Biliary
Cirrhosis**



Azoospermia

Clinical Picture



Meconium ileus



**May lead to
Intestinal
Obstruction**



Special Investigations



Na Content of sweat



FEV1



Oxygen Level

Chest CT:
Bronchiectasis



Treatment

① Chest Physiotherapy- Antibiotics- Bronchodilators

② **Dornase alpha inhalation:**

A Deoxyribonuclease I that digests the excess extracellular DNA and thus decreases mucous viscosity in the bronchi



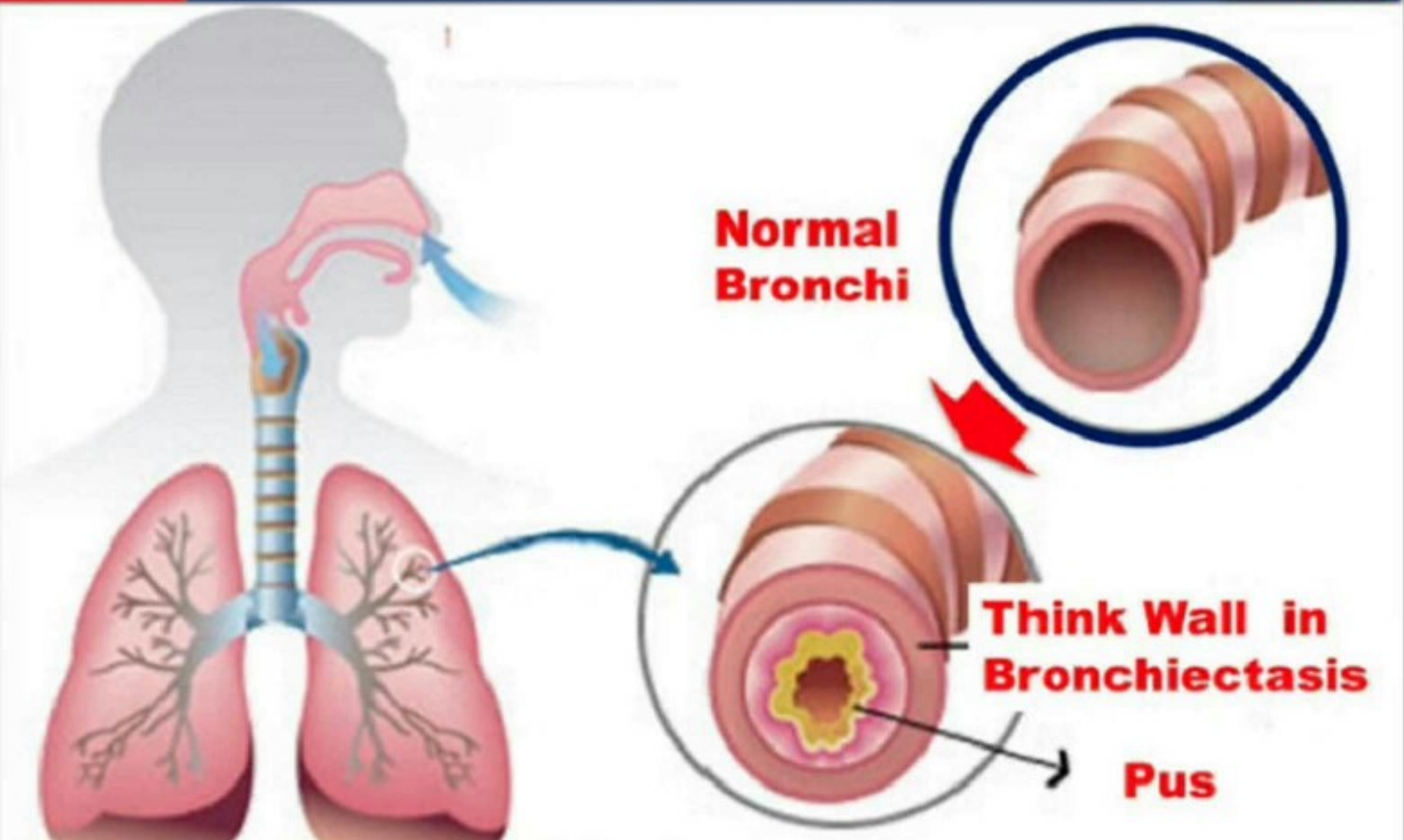
③ Anti-inflammatory therapy:

To decrease the excessive bronchial inflammatory response to chronic bronchitis [Short term courses of corticosteroids with or without NSAID may be helpful]

④ O₂ therapy for hypoxemia

⑤ Pancreatic enzyme replacement
(for malabsorption)

⑥ Lung transplantation



Definition

Persistent abnormal dilatation of the bronchi.

Normal Airway

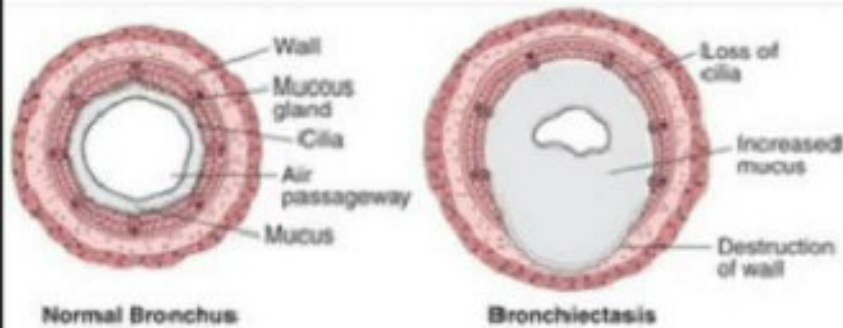


Airway with Bronchiectasis

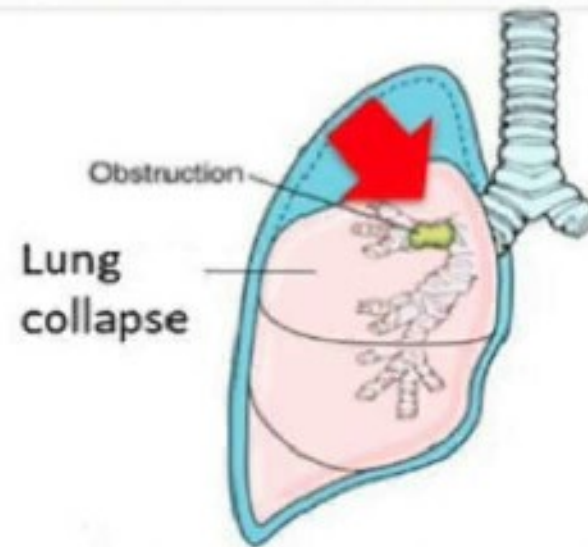


Aetiology

Chronic Infection of The Bronchial tree



Bronchial Obstruction



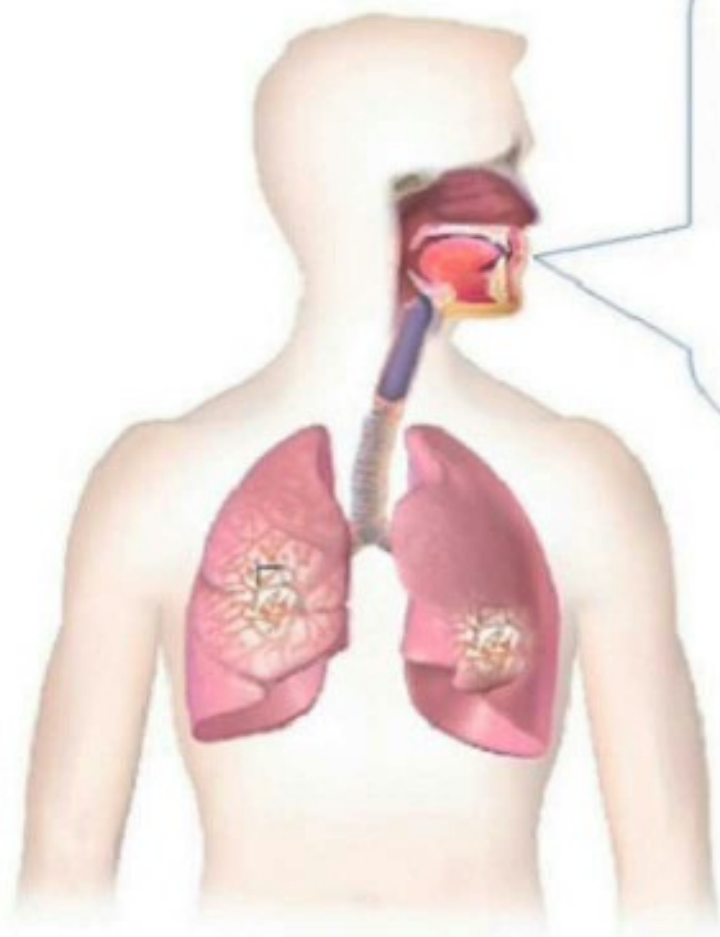
Malignancy or/Viscid secretions

- 1 Cystic fibrosis
- 2 T.B.
- 3 Immune Deficiency Conditions
- 4 Alpha 1 Antitrypsin Deficiency
- 5 Immotile Cilia Syndrome

Clinical Picture

Expectoration

**Big amount
Yellowish
Fetid (Bad odor)
Dependent
Discharge**



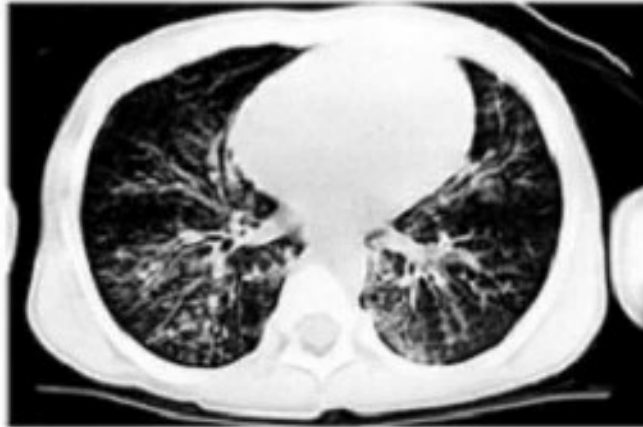
**Persistent
Crackles at lung
basis**

Special Investigations

Chest X Ray



CT Scan



High resolution CT

Sputum



Treatment

① Antibiotics (e.g. Amoxicillin / Clavulanic acid)

[Based on C&S and sputum examination)

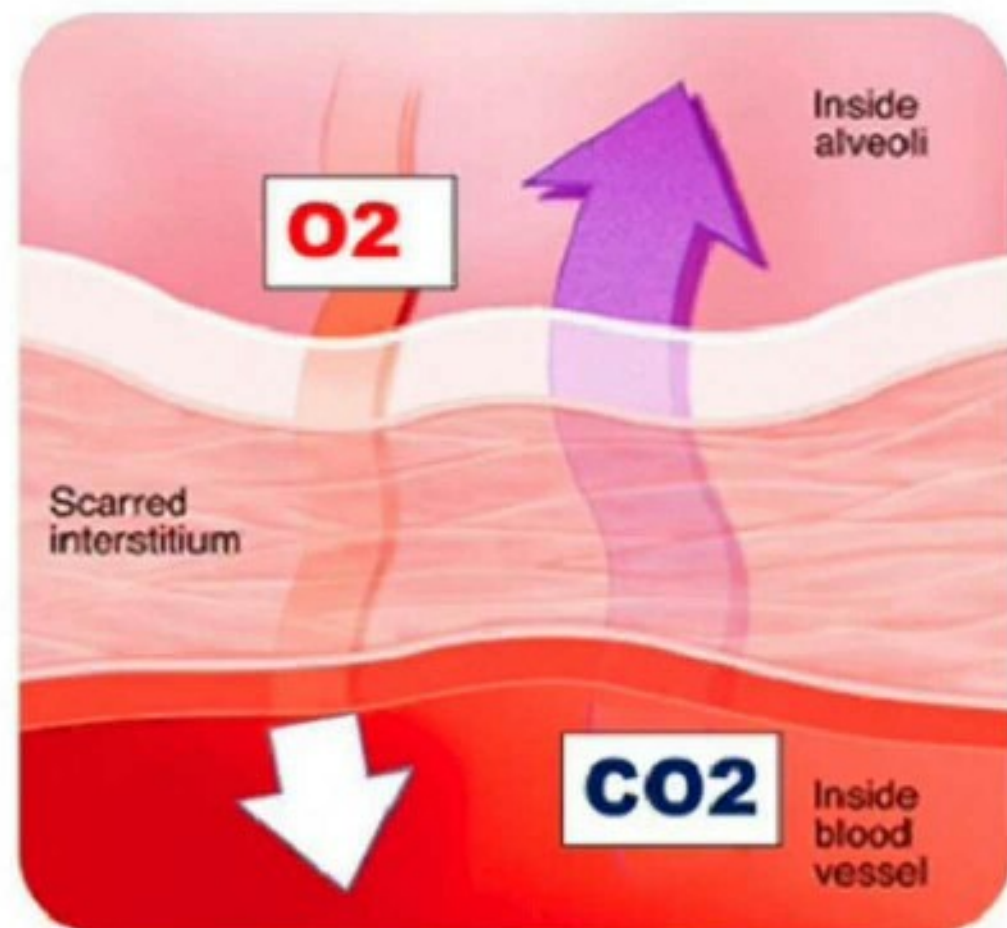
② Physiotherapy

③ Postural drainage



Definition

A heterogonous group of disorders characterized by inflammatory process that affects the alveolar interstitial tissue and may end in permanent fibrosis and altered alveolar structure.



Aetiology

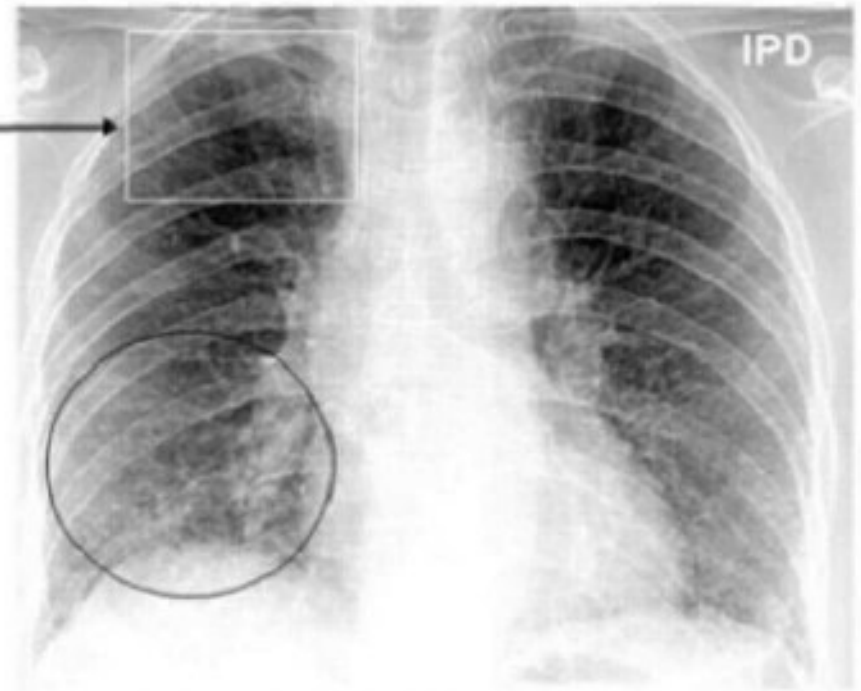
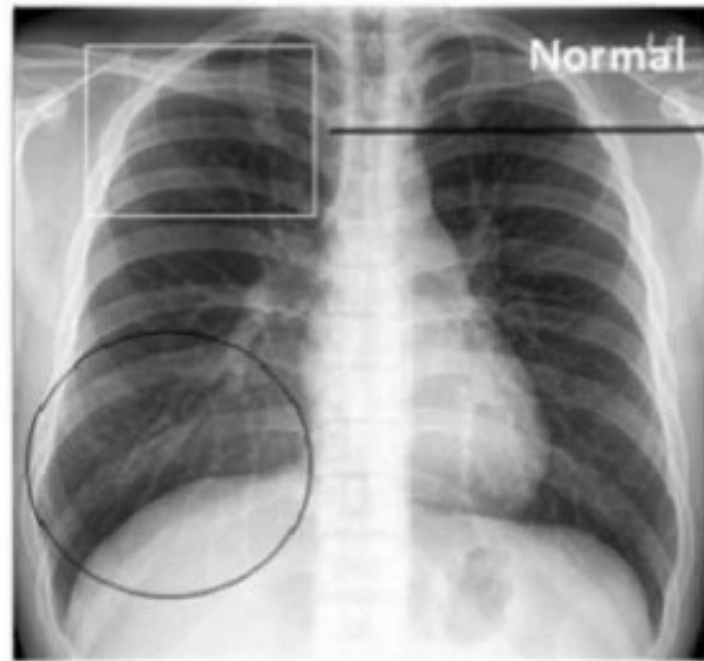
- ① **Idiopathic**
- ② **Occupational** e.g. Asbestosis-Silicosis-Talc -
and injection drug users
- ③ **Systemic diseases** e.g.
Collagen diseases
Sarcoidosis
Eosinophilic pneumonia
- ④ **Irradiation**
- ⑤ **Drugs:**
Amiodarone
Nitrofurantoin
Sulfonamides
Methotrexate

Clinical Picture

- 1- Dry cough**
- 2- Dyspnea**
- 3- Crackles**
- 4- Hyperventilation.....Respiratory Alkalosis [Early]**
- 5- Respiratory failure.. Respiratory Acidosis [Late]**
- 6- Hypoxemia: Clubbing**

Special Investigations

X Ray



RFTs (Restrictive Hypoventilation)
***Plus* Decreased DLC**

ABGs

 **O₂**

 **CO₂**

Treatment

STOP the offending factor as **Early** as possible to decrease the progression of the disease.

**Med
Learn**

Examples for IPF

You

DIAGNOSIS

NAME:

RELATIONSHIP TO THE PATIENT:

PHYSICIAN

**PULMONARY
FIBROSIS**

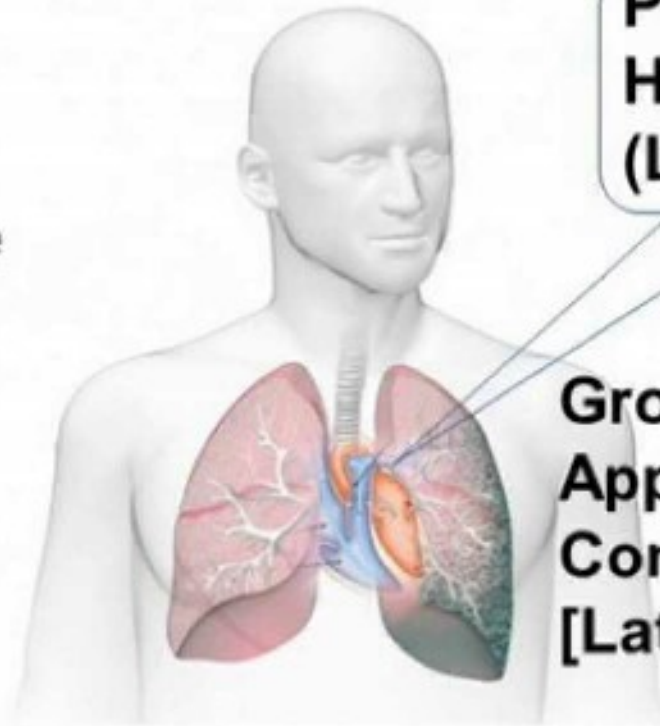
Idiopathic IPF

Dyspnea

**Non
Productive
Cough**

**Basal late
crackles**

**Clubbing
of fingers**



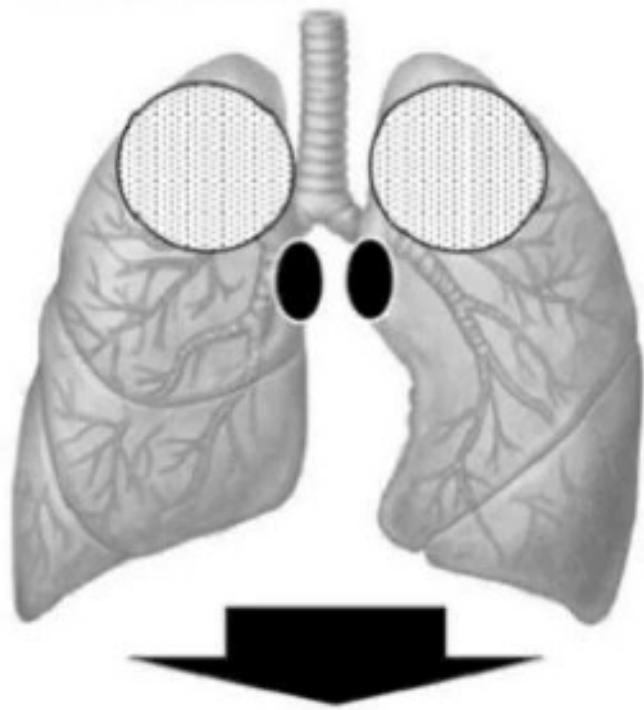
**Pulmonary
Hypertension
(Late)**

**Ground Glass
Appearance.....Honey
Comb Appearance
[Later]**

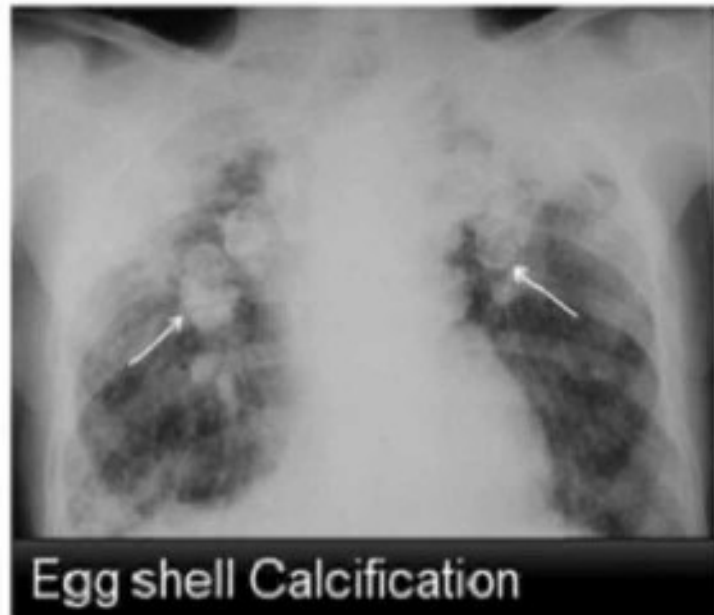
**Lung biopsy
is diagnostic**

**Treatment include Corticosteroids
– Interferon - Cyclosporine**

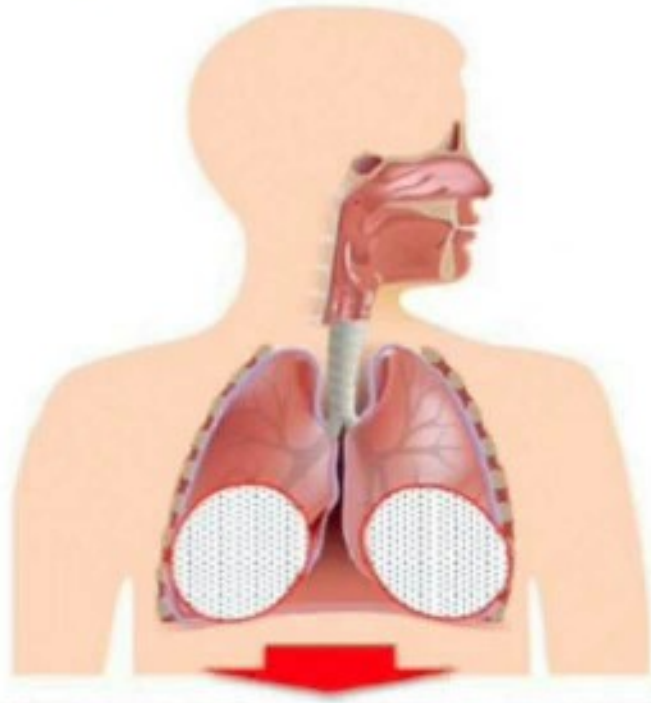
Silicosis



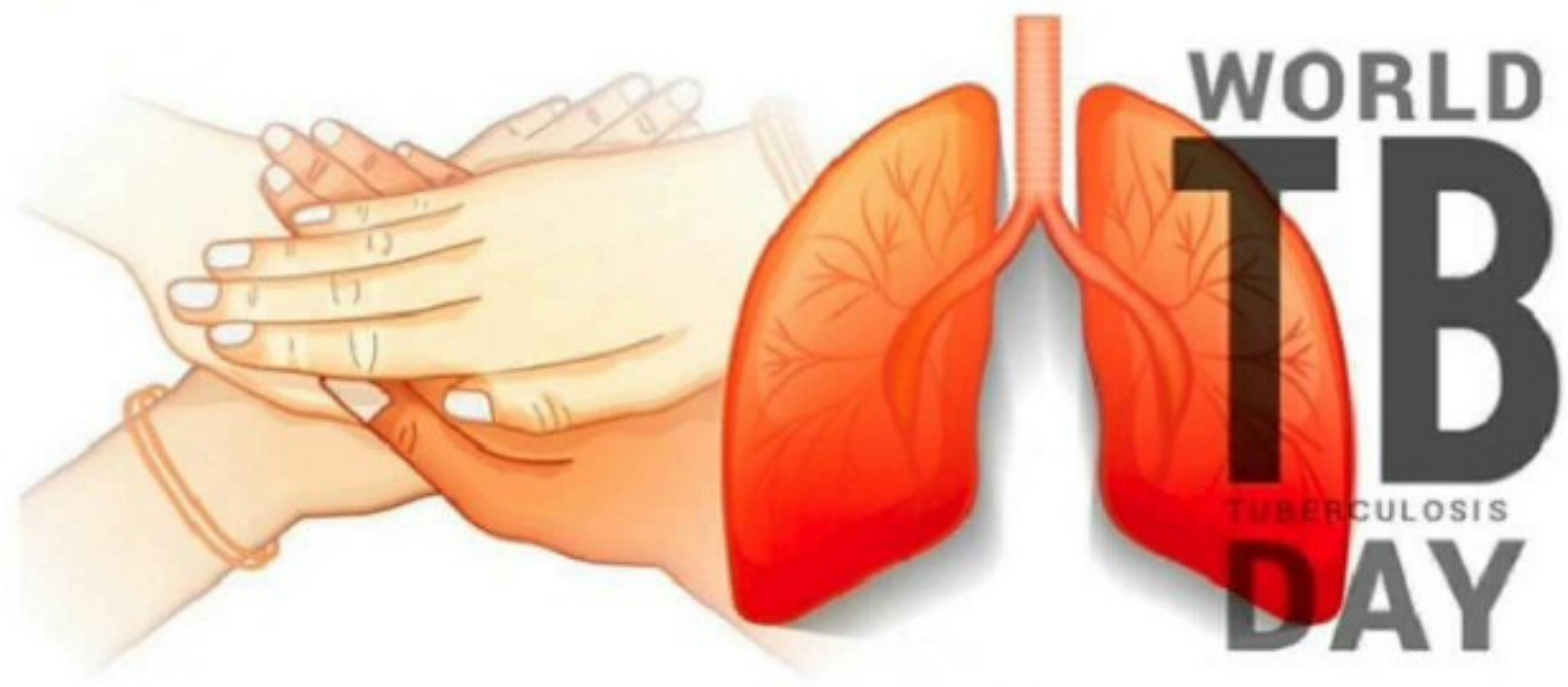
- ◀ **Initial lesion appears as Miliary infiltration of upper lung lobes**
- ◀ **Egg shell Calcification**
- ◀ **If the patient developed Hemoptysis plus Loss of weight suspect Tuberculosis**



Asbestosis



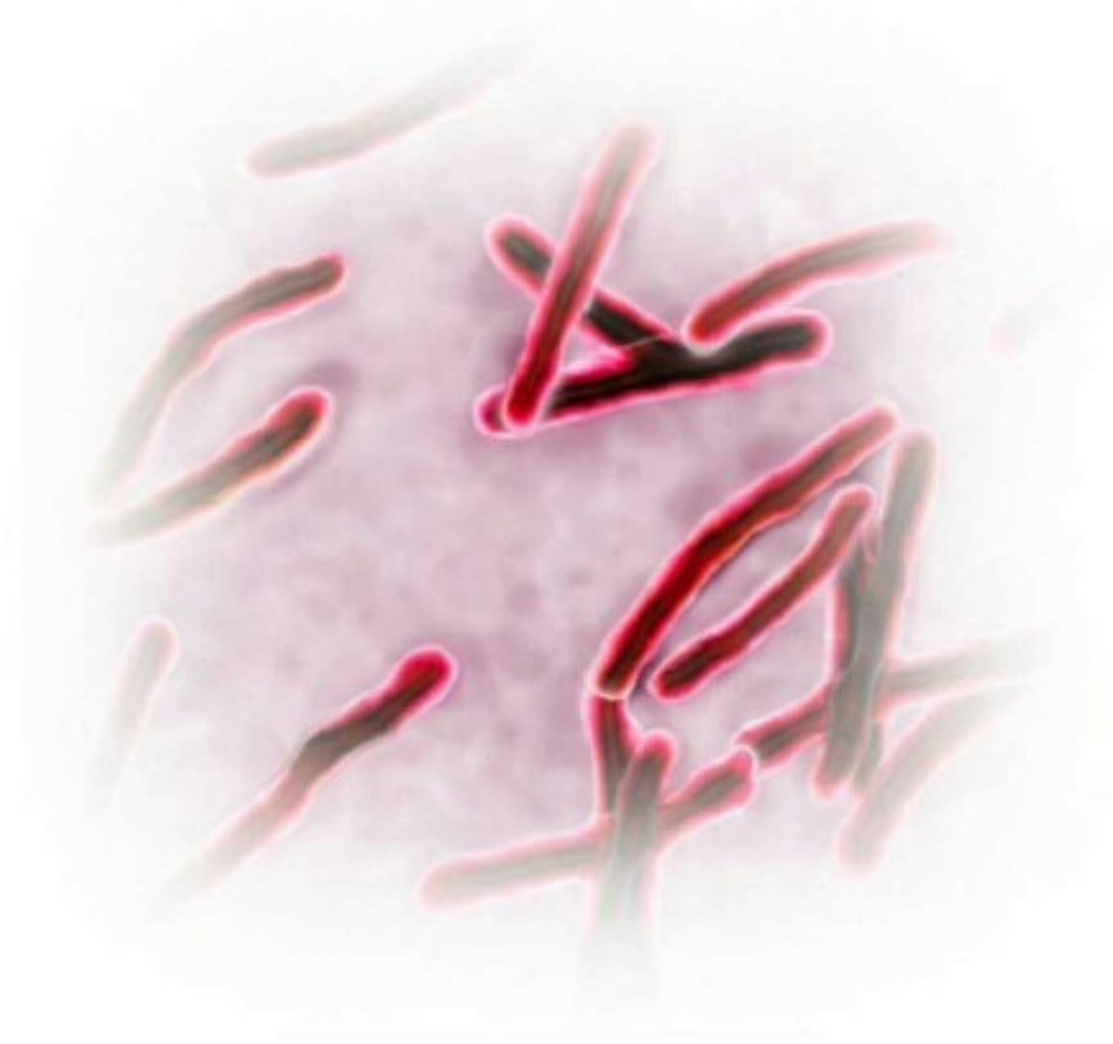
- ◀ **More in lower lung lobes**
- ◀ **Pleural Plaques (NOT premalignant)**
- ◀ **Mesothelioma**
- ◀ **↑ Incidence of lung cancer**



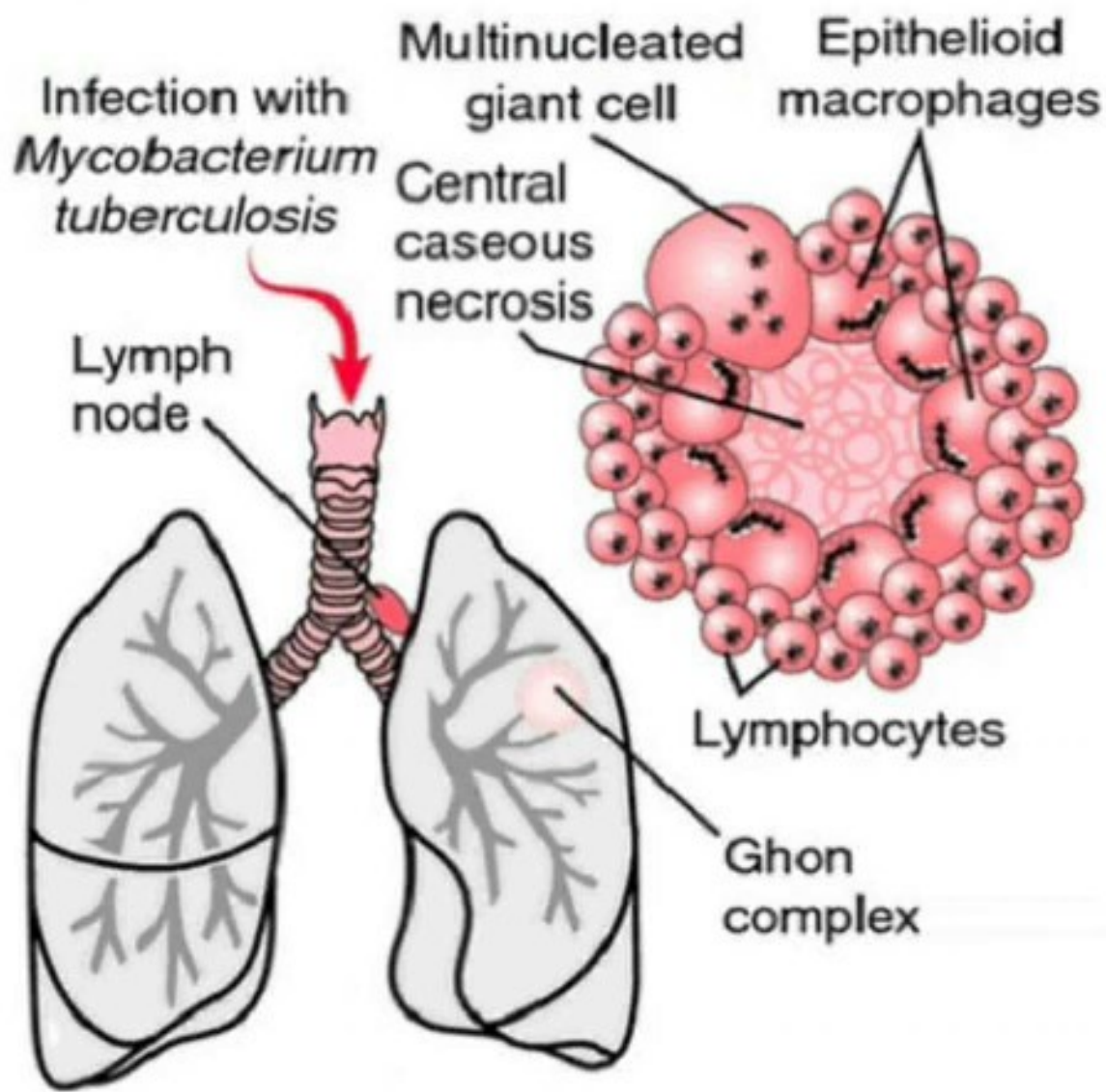
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed
do eiusmod tempor incididunt ut labore

Definition

**A chronic infection of the lungs caused by
Mycobacterium Tuberculosis**



Pathogenesis



Pathogenesis

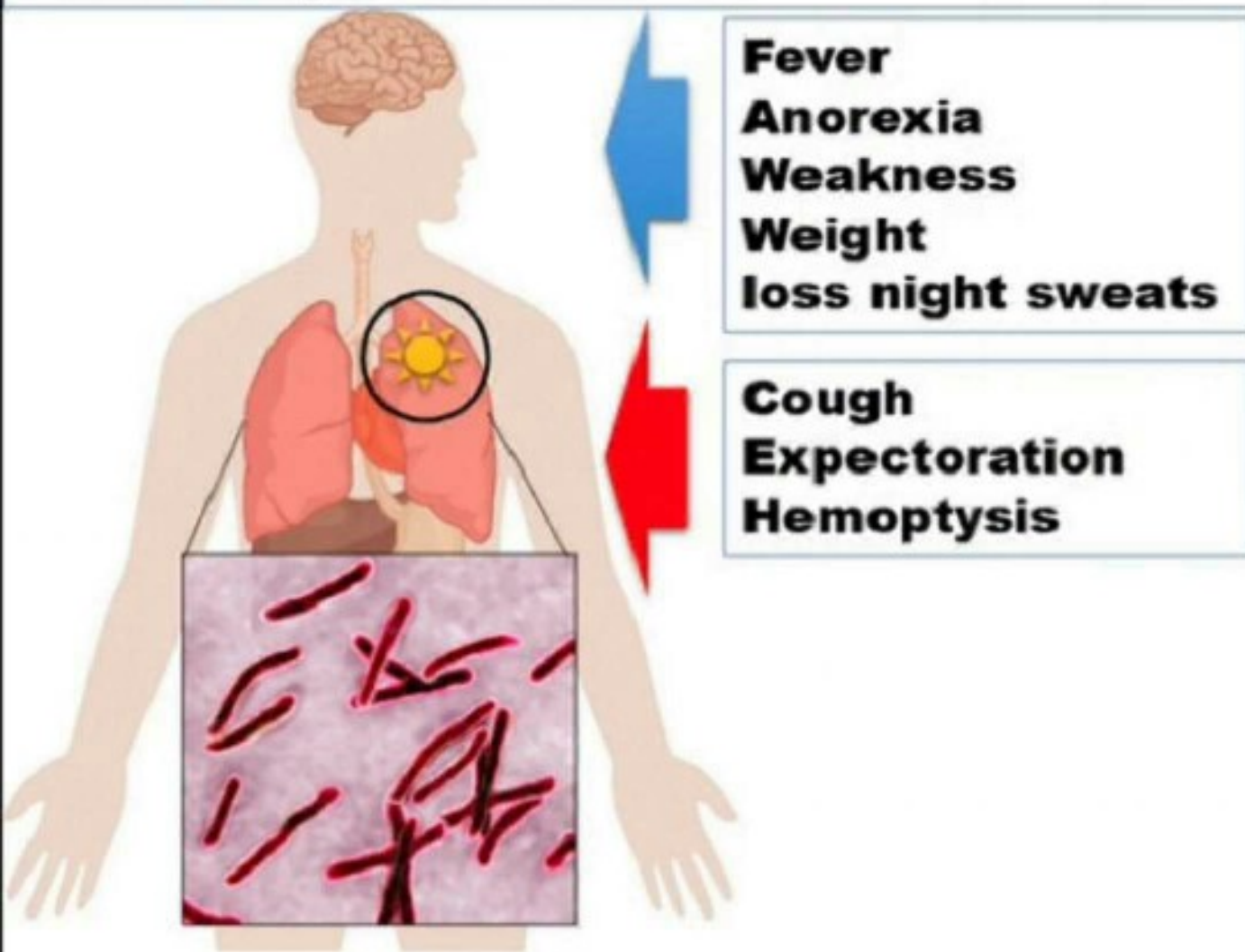
- 1 Inhalational infection
- 2 The cell wall of the organism contains a **LPS** which induces the macrophages to secrete **TNF- alpha** (Low grade Fever-Weight Loss- Fatigue- Night Sweats)
- 3 The organism contains a **Heat Shock Protein** that stimulates the T-Lymphocyte autoimmune reaction which causes further tissue damage
- 4 Hypersensitivity reaction to Tuberculin Protein causes +ve Tuberculin test
- 5 **Predisposing factors** for the disease include:



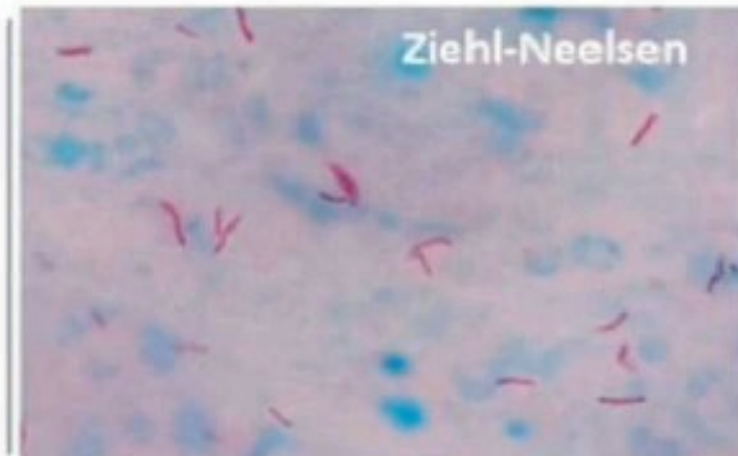
Diabetes Mellitus
Immunosuppression
Silicosis

Clinical Picture

Chronic chest complaints NOT responding to ordinary treatment



Special Investigations



- ① Positive Tuberculin Test
- ② Apical pulmonary infiltrates
- ③ Sputum smear examination with Z-N stain or
- ④ Direct Florescence Studies
- Positive Culture for the organism
- ⑤  ESR

Treatment

Antituberculous Drugs



Treatment of Pulmonary Tuberculosis



I Use combination chemotherapy of at least 4 Drugs of the following:

- 1 INH**
- 2 Rifampicin**
- 3 Pyrazinamide**
- 4 Ethionamide**
- 5 Streptomycin**

**II Most Patients are effectively treated
with 6 Months (or 9 Months)
Chemotherapy.**

Monitor the treatment by Sputum Examination



III Corticosteroids are added to the treatment in cases of **Tuberculous Meningitis** (to decrease fibrosis)



VI Add Pyridoxine (Vitamin B6) to the treatment if INH is used as it causes Pyridoxine Deficiency (Peripheral Neuropathy)



V Monitor adverse drug reactions by:-

Test for Peripheral Neuropathy



INH may lead to
Pyridoxine deficiency
which causes
peripheral Neuropathy

V Monitor adverse drug reactions by:-

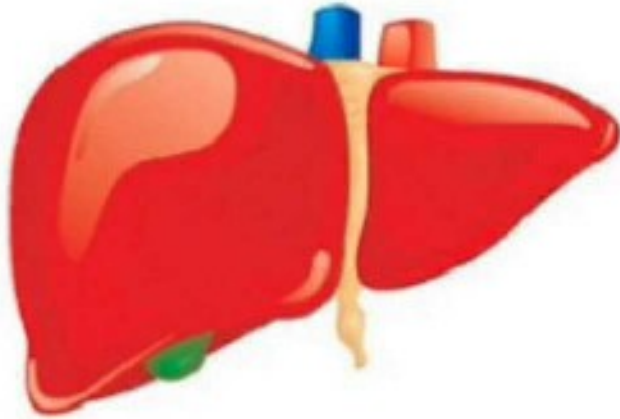
Test for Red & Green Vision



Ethambutol may
cause Optic
Neuritis

V Monitor adverse drug reactions by:-

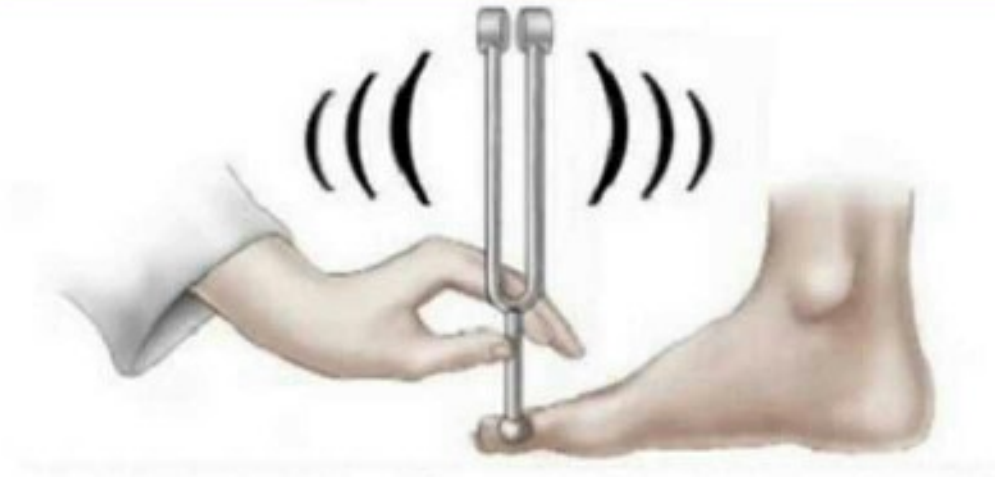
Test for Liver Functions



**Rifampicin &
Pyrazinamide**
may cause
hepatotoxicity

V Monitor adverse drug reactions by:-

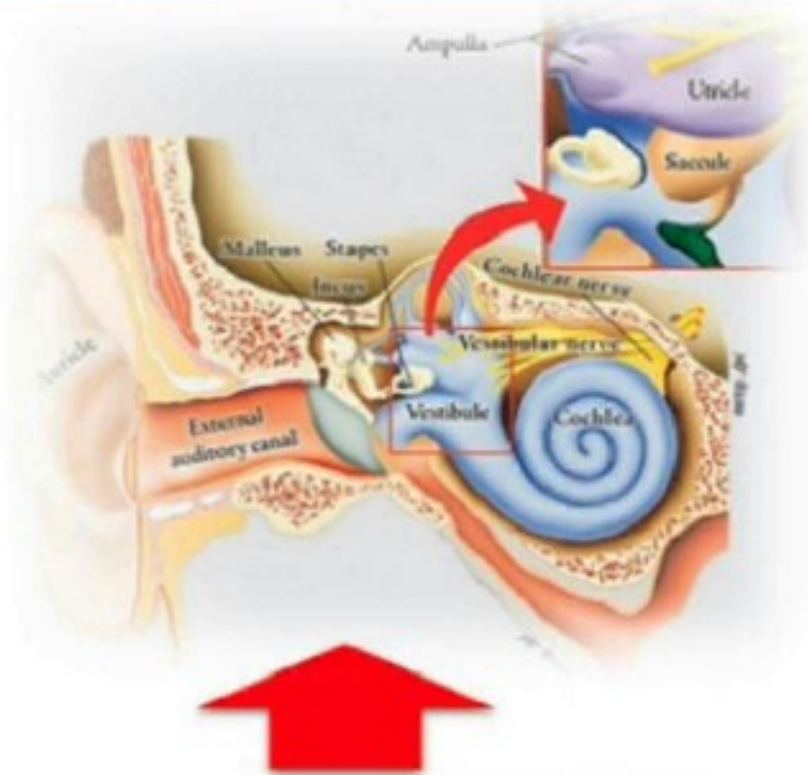
Test for Peripheral Neuropathy



INH may lead to
Pyridoxine deficiency
which causes
peripheral Neuropathy

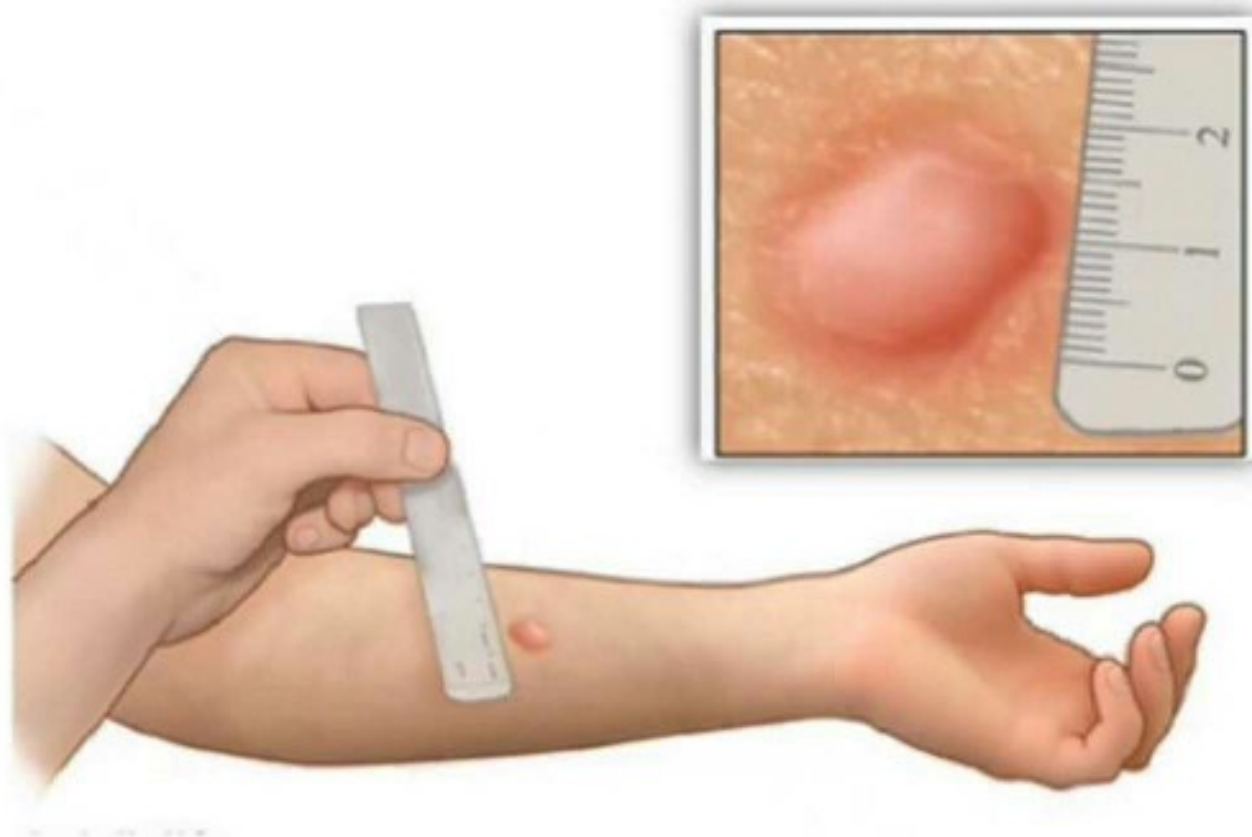
V Monitor adverse drug reactions by:-

Test for Vestibular functions

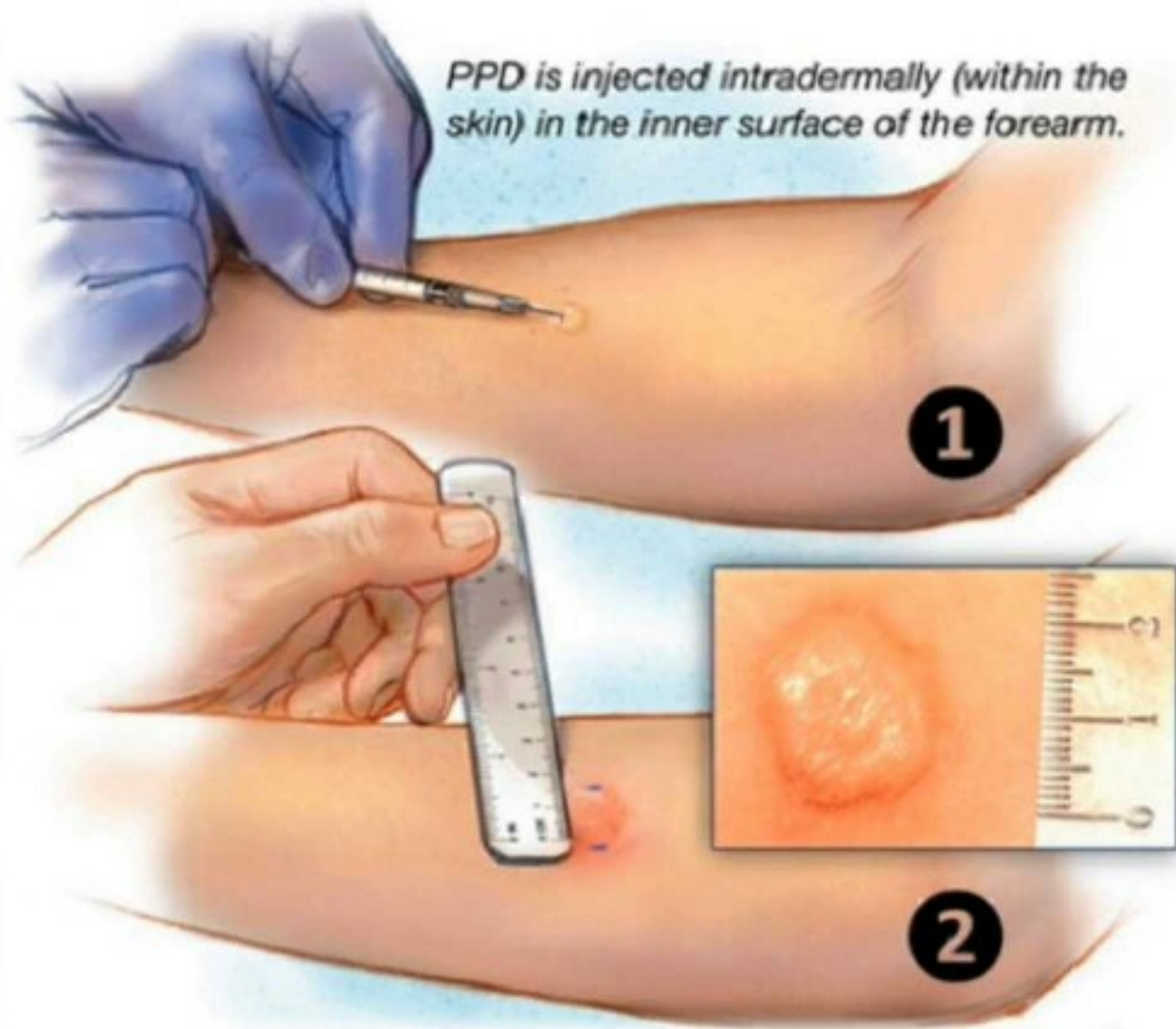


Streptomycin
may damage the
8th Cranial Nerve

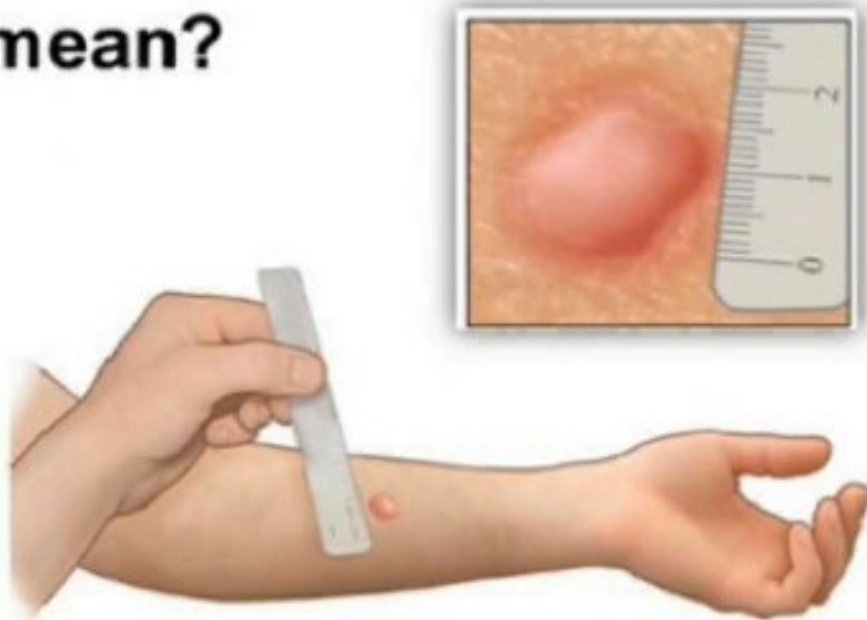
Tuberculin Test



Tuberculin Test



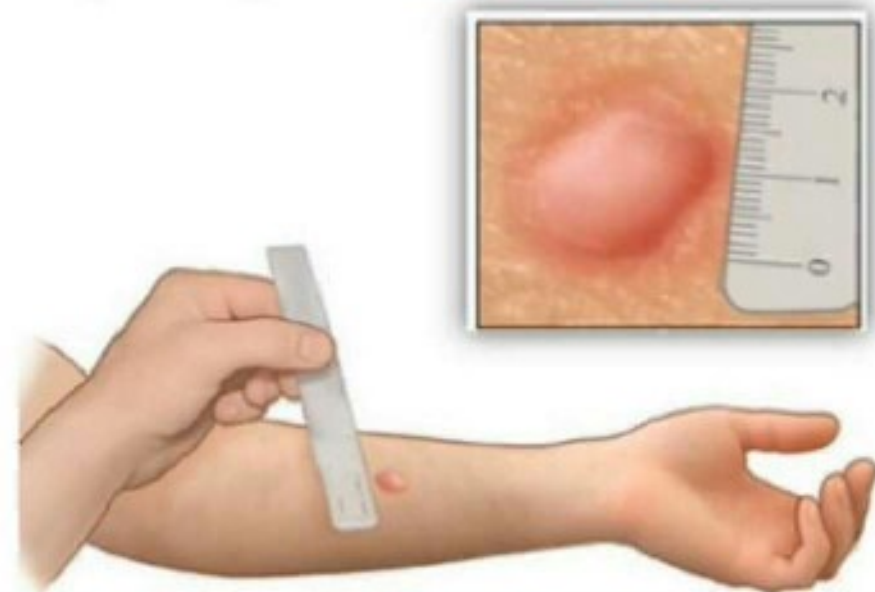
What does the presence of **positive** tuberculin test mean?



Previous exposure to the organism

- ① BCG vaccination
- ② Previous infection
- ③ Active infection

In people **without** any risk of tuberculosis



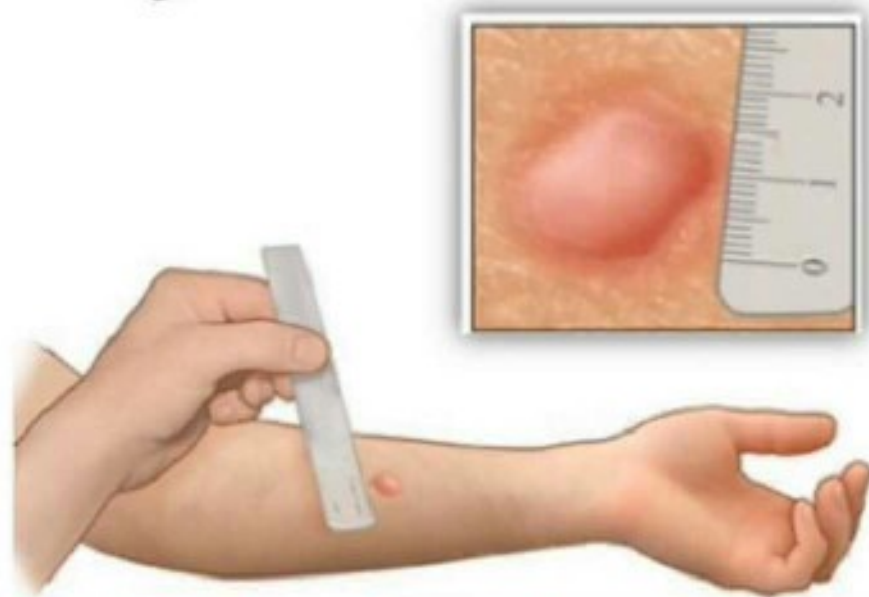
What is the diameter of the nodule in Tuberculin Test that suggests the presence of tuberculosis?



$\geq$

15 mm

In any of these situations:-



- ① Newly emigrants,
- ② I.V. drug users,
- ③ Chronic illness such as Diabetes Mellitus
- ④ Silicosis.

What is the diameter of the nodule in Tuberculin Test that suggests the presence of tuberculosis?



≥

10 mm

In any of these situations:-



- ① HIV positive,
- ② immunosuppressed
- ③ Recent exposure to patients with active tuberculosis .

What is the diameter of the nodule in Tuberculin Test that suggests the presence of tuberculosis?



IV

5 mm

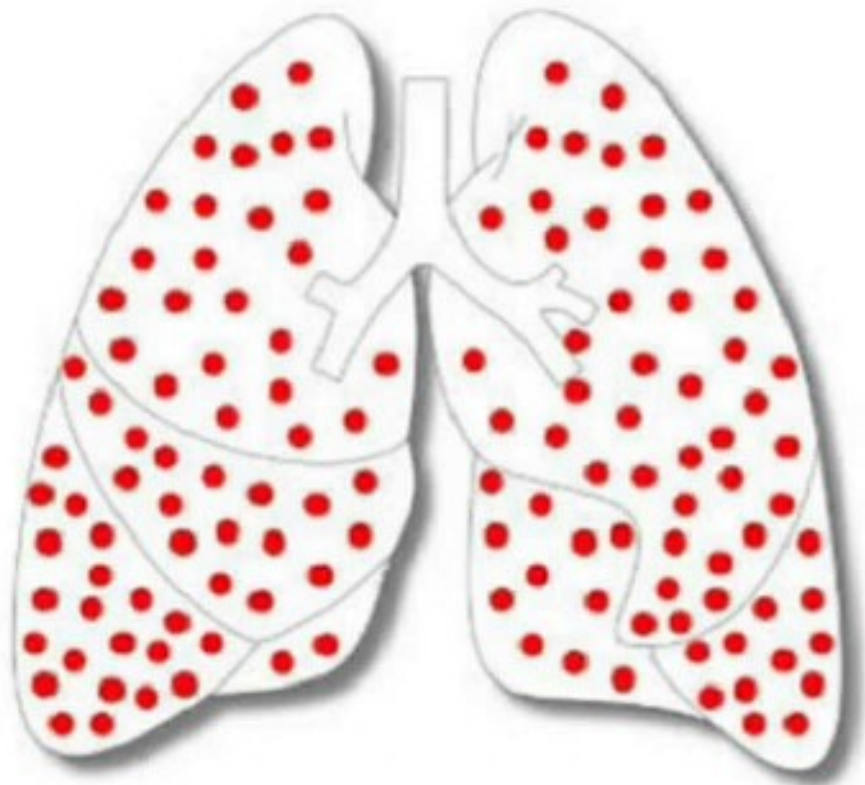
What does the presence of **positive** tuberculin test mean?



Previous exposure to the organism

- ① BCG vaccination
- ② Previous infection
- ③ Active infection

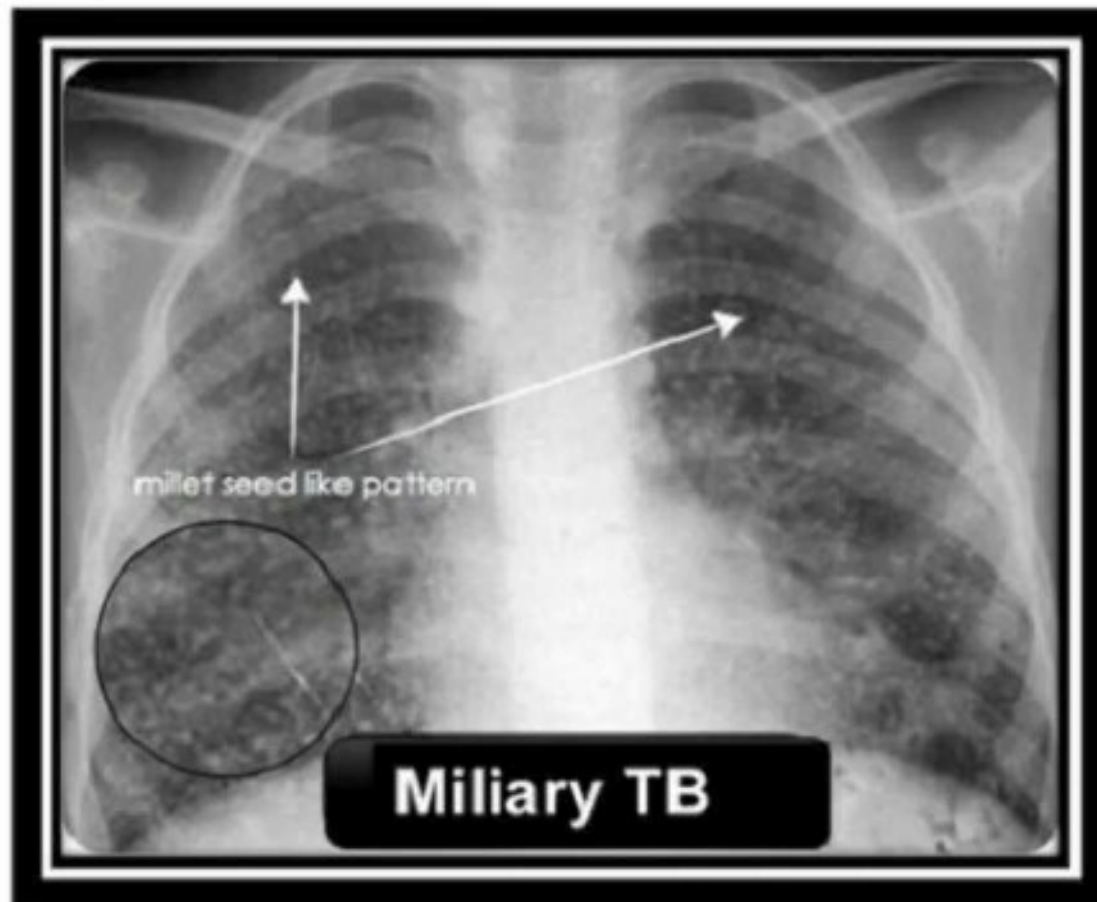
Miliary Tuberculosis



Definition

Miliary tuberculosis (TB) is the widespread dissemination of *Mycobacterium tuberculosis* via hematogenous spread.

Classic **Miliary TB** is defined as millet like (mean, 2 mm; range, 1-5 mm) seeding of **TB** bacilli in the lung, as evidenced on chest radiography.





Meningitis



Choroidal Nodules



Hepatomegaly



Splenomegaly



Adrenal Insufficiency

Severe Toxemia:
Bone Marrow Suppression
Leukopenia
Anemia
Negative Tuberculin Test



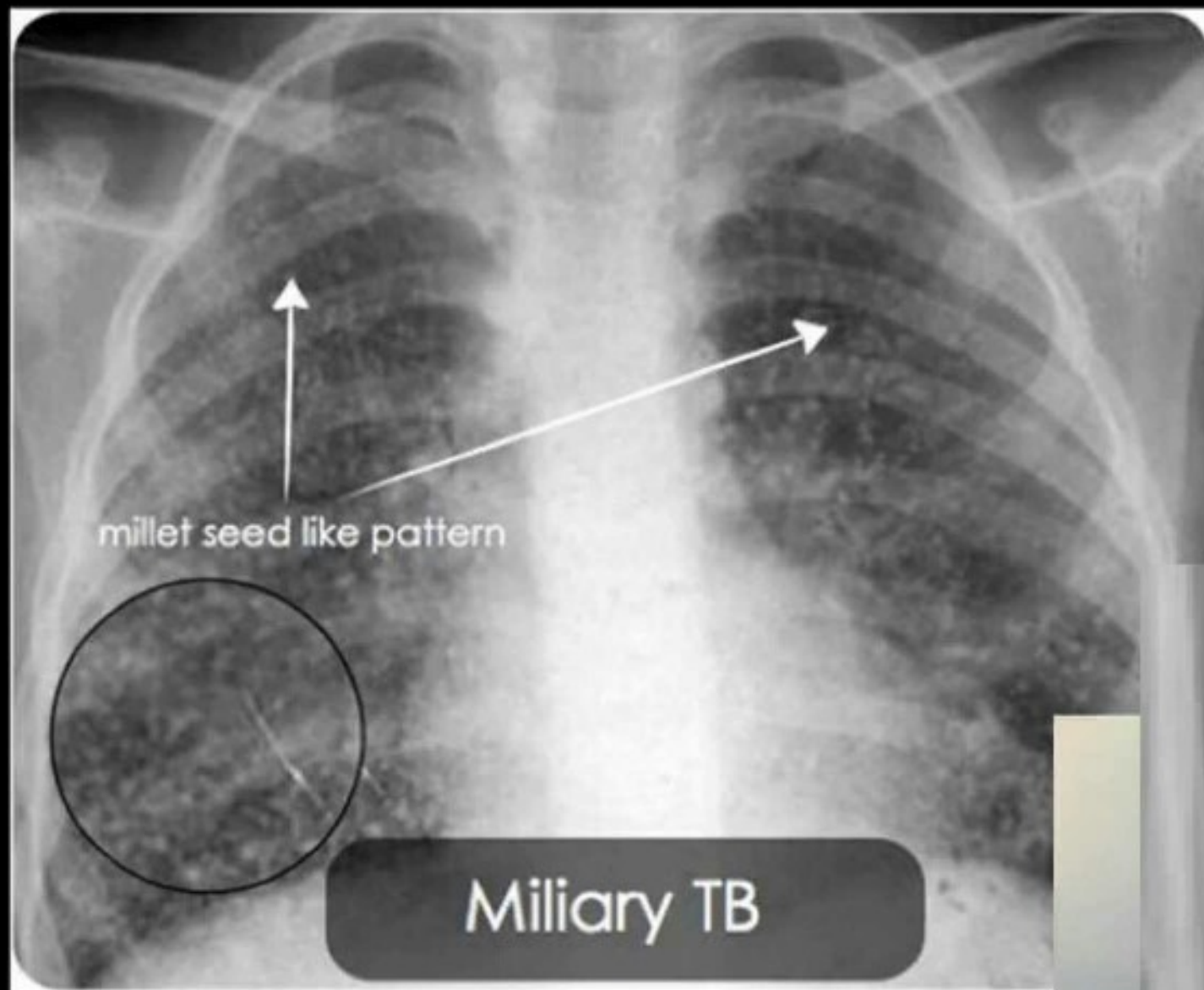
Miliary shadow in the lungs

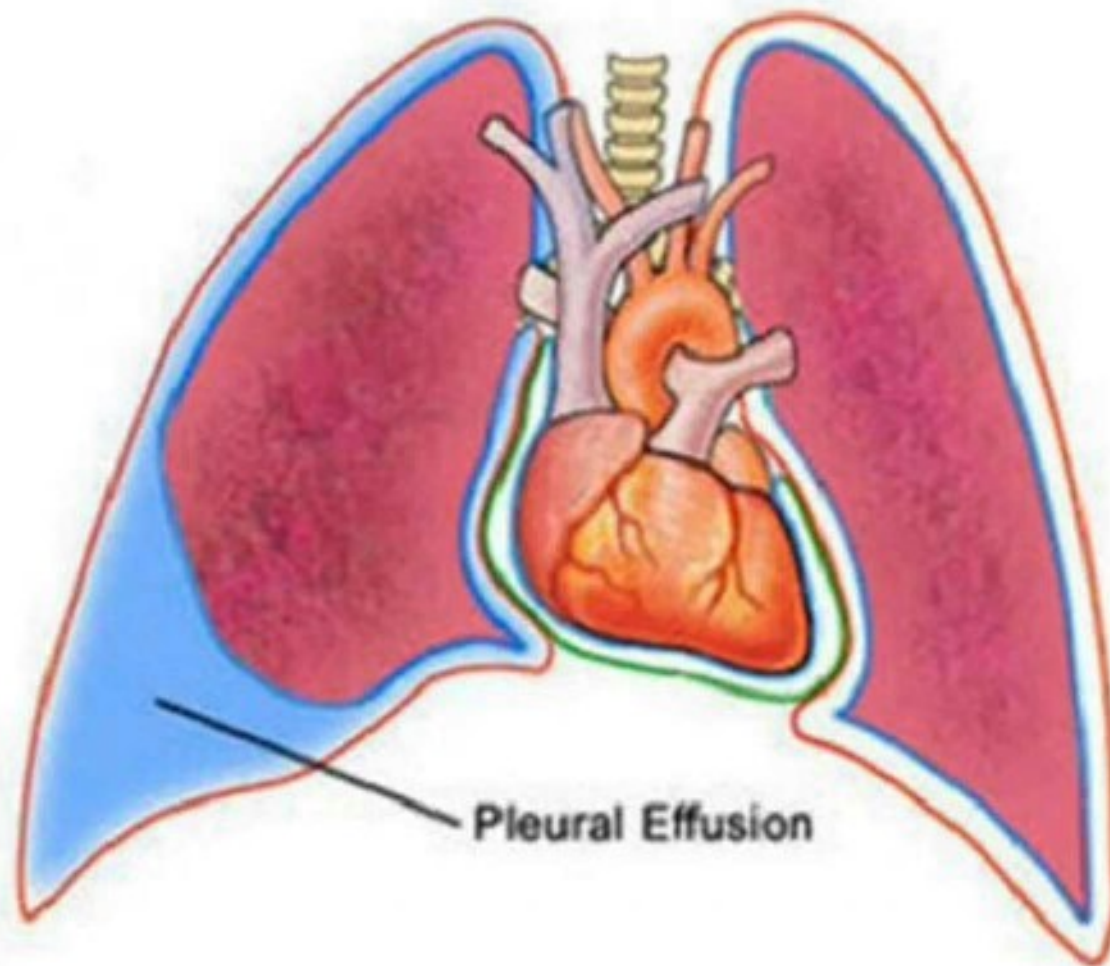


Before treatment



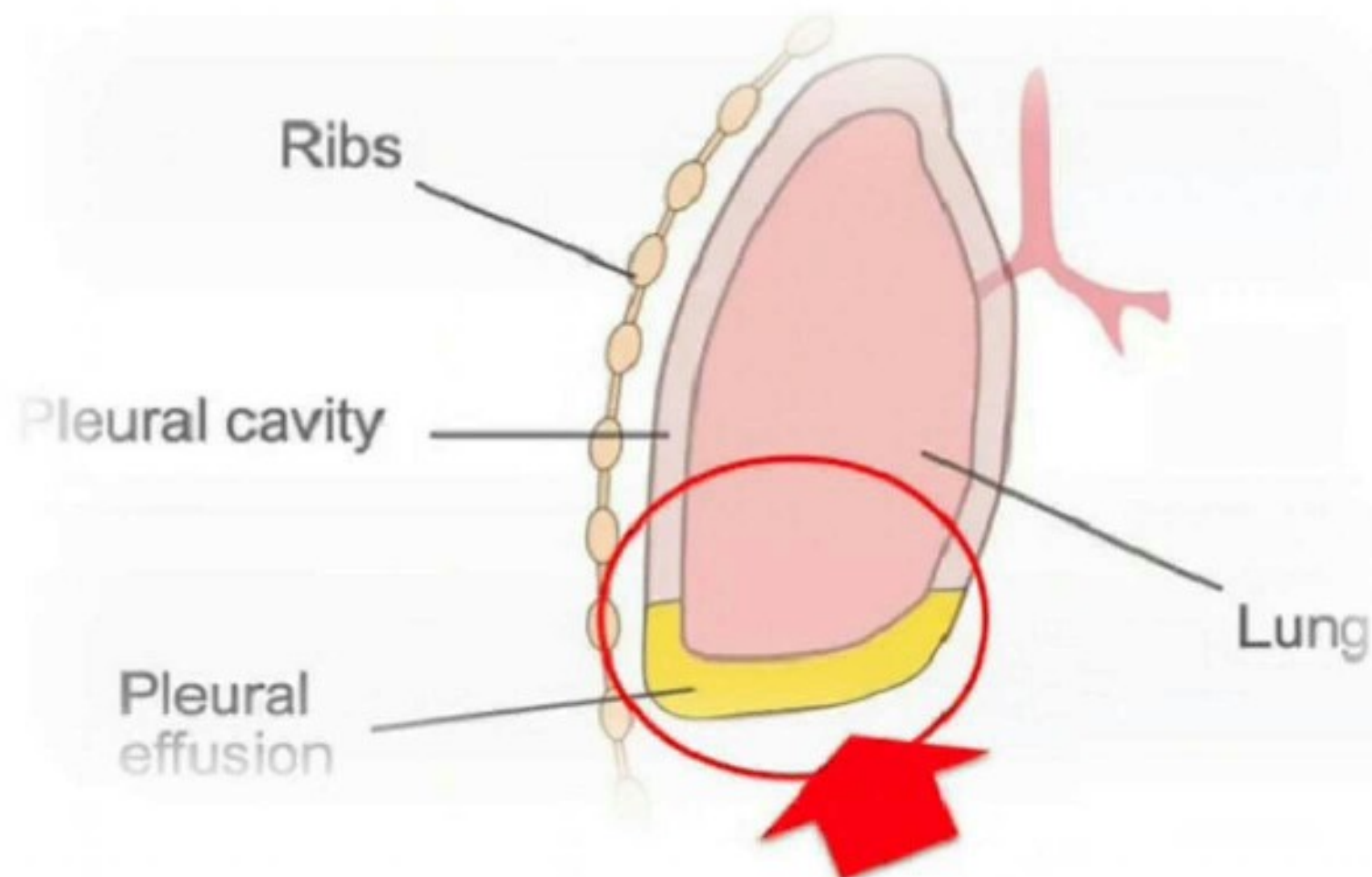
After treatment





Definition

Accumulation of fluid inside the pleural sac.



Aetiology

Serum Exudate

Straw Yellow

↑ **SG**

↑ **Proteins**

↑ **Cells:**

Lymphocytes



Pneumonia

TB

Viral

Rheumatoid arthritis

SLE

Malignancy

Aetiology

Empyema (Pus)

Opaque Yellow

↑ SG

↑ Proteins

↑ Cells: **PMNLs**

↓ **SUGAR**



- 1- SLS
- 2- Chest Wall Infection
- 3- Mediastinal Infection
- 4- ALD or SDA
- 5- Infection in an Effusion
- 6- Septicemia and Pyemia

Aetiology

Serum transudate

Straw Yellow

↓ SG

↓ Proteins

↓ ↓ Cells



Decreased Proteins:

Nutritional- Nephrotic Syndrome-
LCF- MAS

**Increase Hydrostatic Pressure in
SVC:** Mediastinal Syndrome or
Heart Failure

Aetiology

Hemorrhagic

Reddish in color

 **RBCs**



Trauma

Tumor

++++ Infections

Lung Infarction

Aetiology

Chylous

Milky White

 **Fat**

 **Cholesterol**



**Obstruction of the
Thoracic Duct**

Aetiology

Empyema (Pus)

Opaque Yellow

↑ SG

↑ Proteins

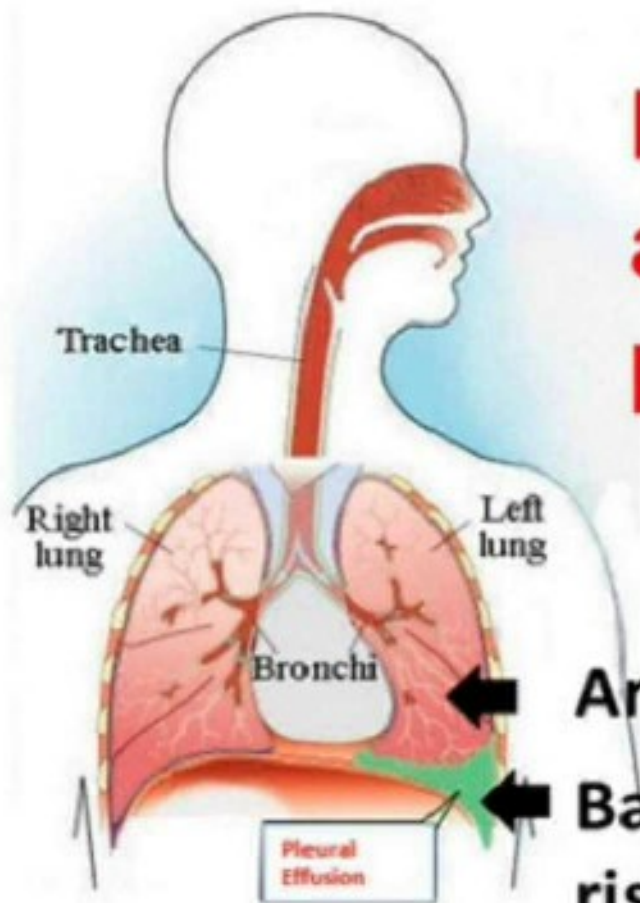
↑ Cells: **PMNLs**

↓ **SUGAR**



- 1- SLS
- 2- Chest Wall Infection
- 3- Mediastinal Infection
- 4- ALD or SDA
- 5- Infection in an Effusion
- 6- Septicemia and Pyemia

Clinical Picture



**Dull
aching
pain**

Area of Hyperresonance

**Basal stony dullness
rising to the axilla**

Dyspnea if ++++

Clinical Picture

① **Inspection:** ?! Bulge

② **Palpation**

Trachea: Shifted to the other side

Mobility: Limited

TVF: Decreased but Aegophony may be heard above it

③ **Percussion** Stony dullness rising to the axilla

④ **Auscultation**

Normal Sounds

Diminished vesicular sounds with bronchial breathing above it due to collapse of the alveoli

Added Sounds

None

Special Investigations

X Ray



Small



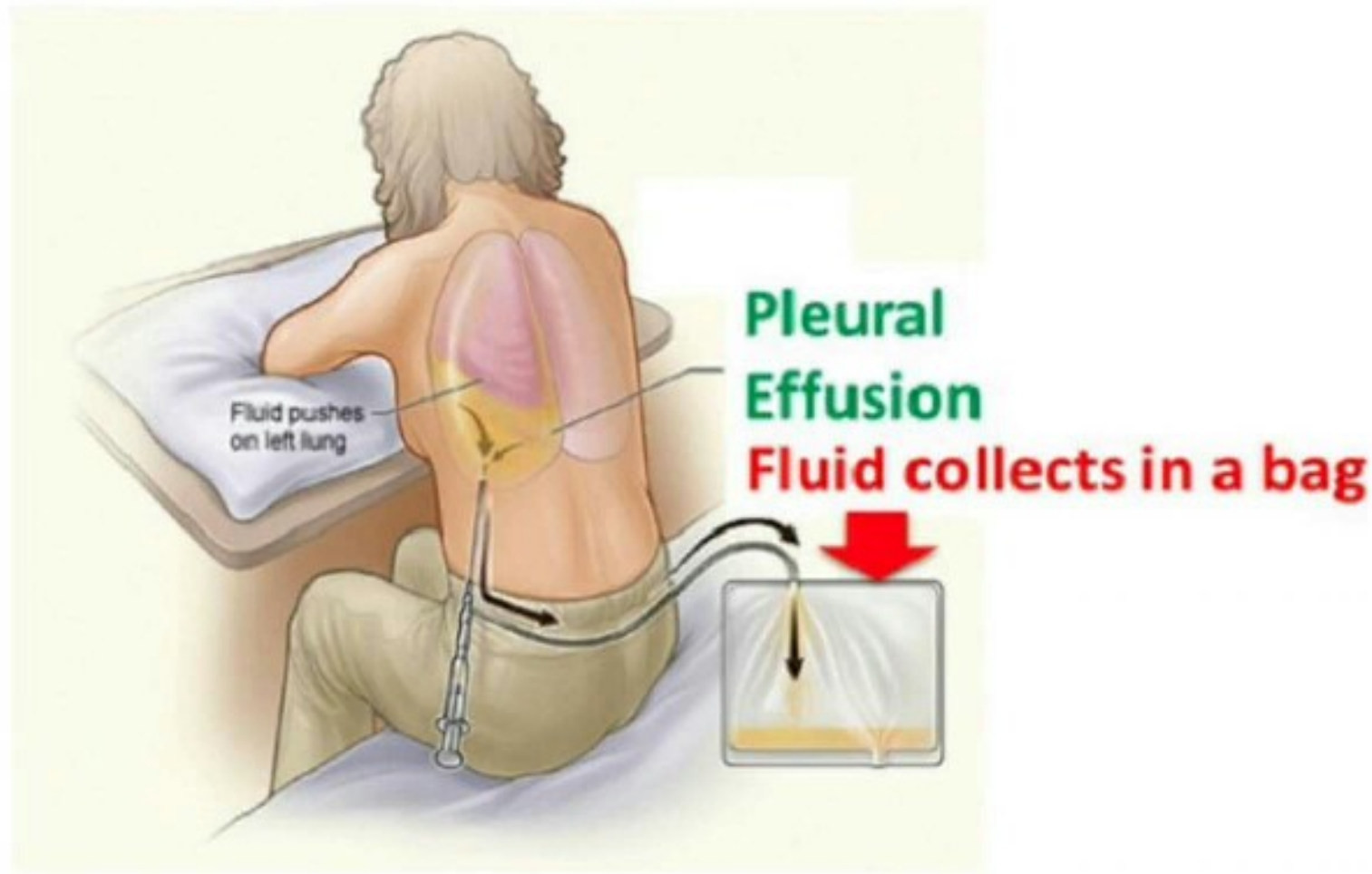
Moderate



Large

Special Investigations

Diagnostic Thoracocentesis



Detection of the cause

Special Investigations

Detection of the cause

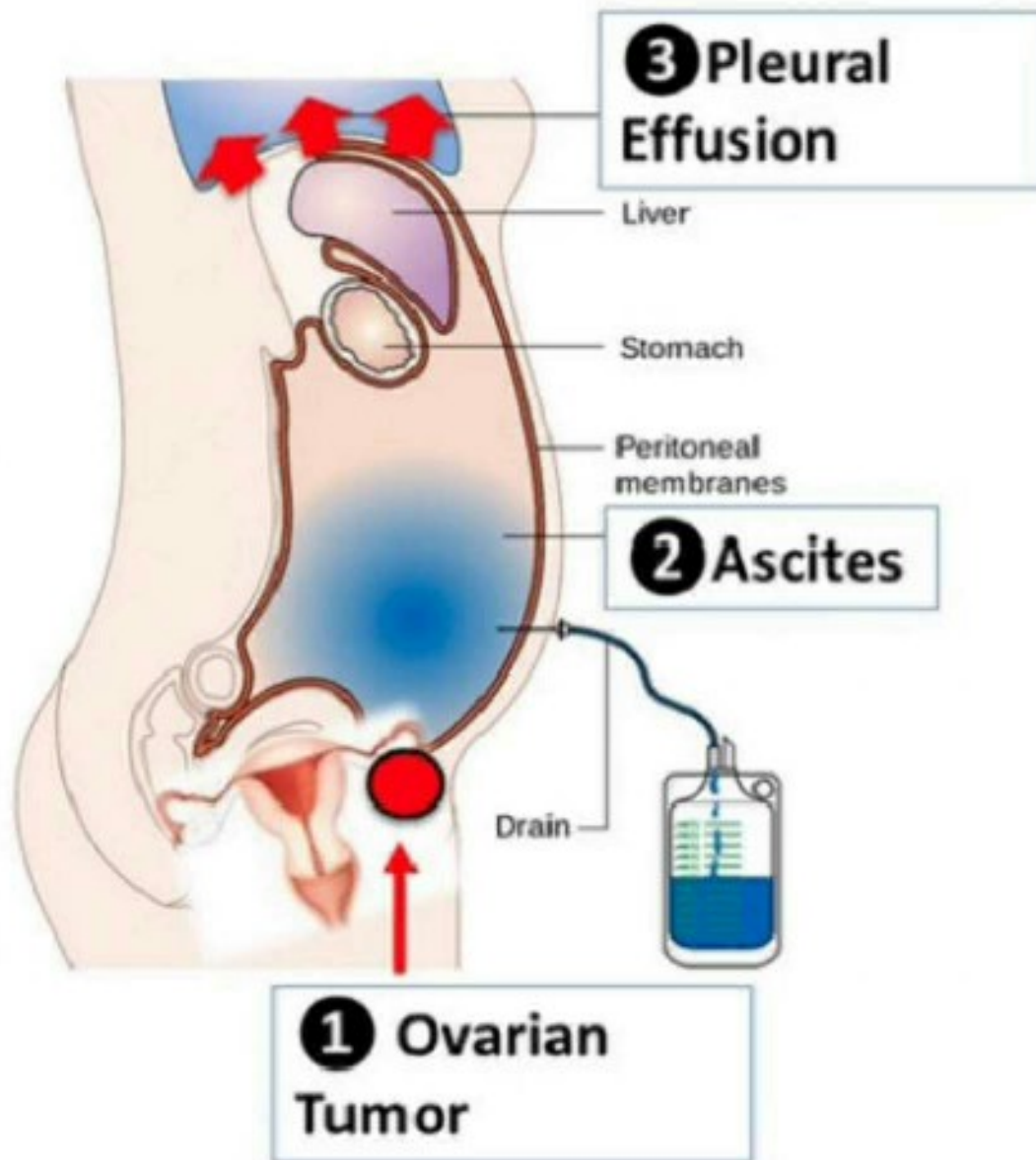


Treatment

Aspiration + Treatment of the cause



Meigs Syndrome





Definition

Recurrent attacks of apnea during sleep that causes medical and health complications

Aetiology

① Inhibition of the CNS

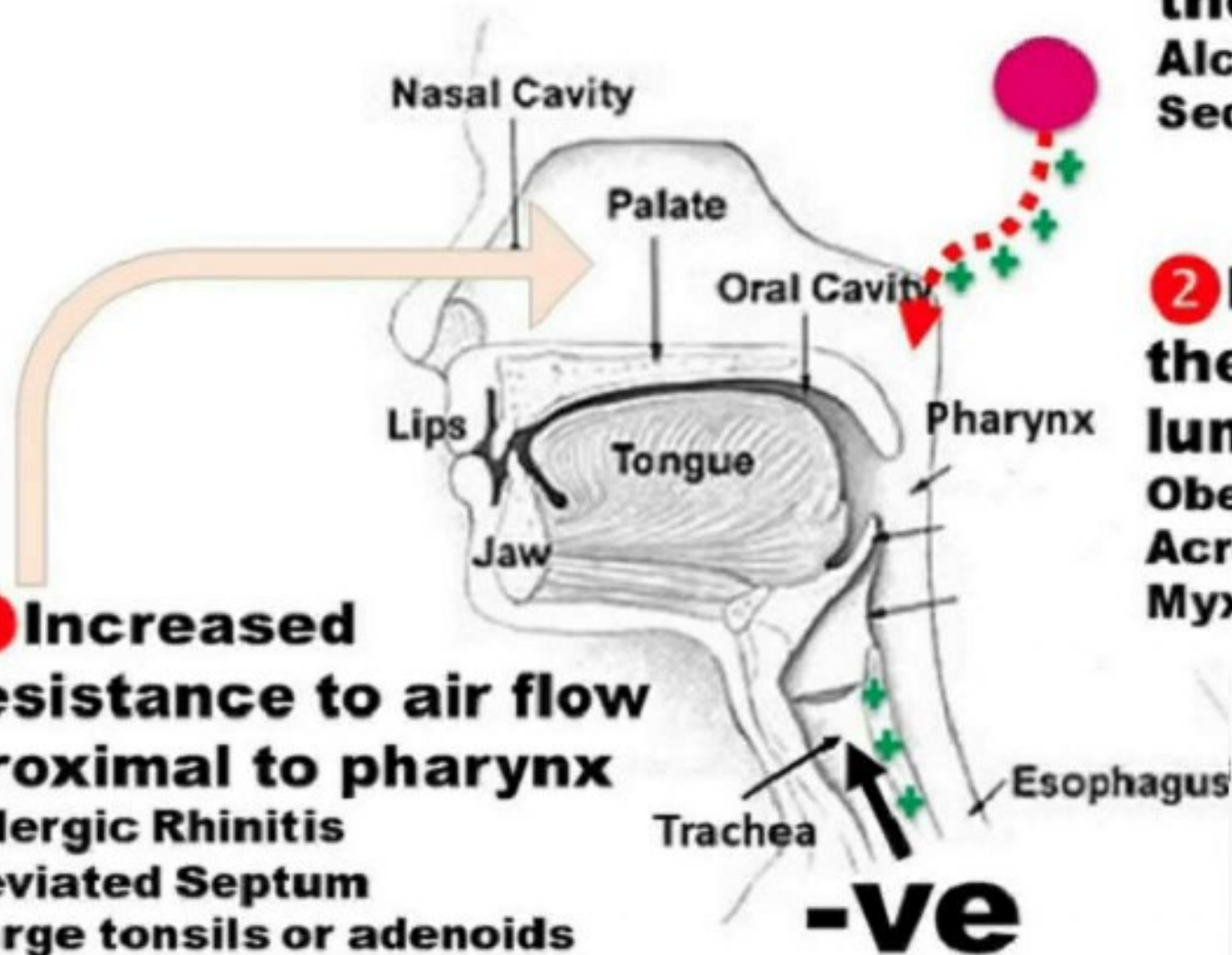
Alcohol
Sedatives

② Narrowing of the pharyngeal lumen

Obesity
Acromegaly
Myxedema

③ Increased resistance to air flow proximal to pharynx

Allergic Rhinitis
Deviated Septum
Large tonsils or adenoids



Clinical Picture

Snoring by night
Morning headache
Day time sleepiness
Impotence

If more severe, may lead to
Hypoxia which may cause:
Secondary polycythemia
Hypertension-PH-
Arrhythmias



Clinical Picture

IF

+ **+** **+**

Polycythemia
> Hypoxemia

COPD

**Obstructive
Sleep
Apnea**



Special Investigations

**Ear Oximeter to
detect the attacks of
night hypoxemia**



Treatment

- 1 Avoid Alcohol**
- 2 Weight loss**
- 3 Nasal CPAP to overcome proximal obstruction**
- 4 Surgery in severe cases (Tracheostomy)**

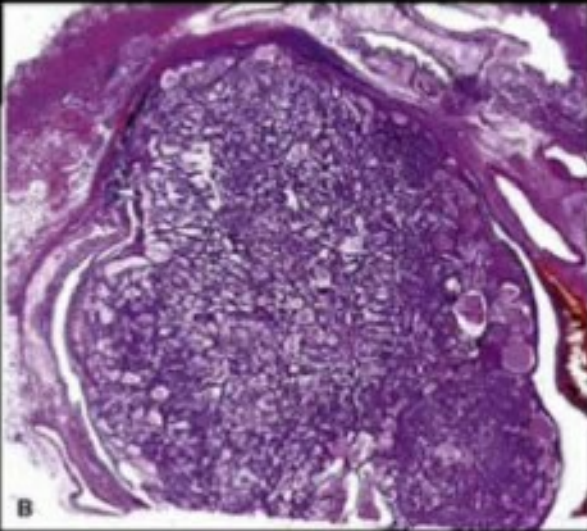


Definition

A locally invasive tumor arising in the bronchi.



A



B

Clinical Picture

Hemoptysis
(Very Vascular)

Serotonin



Carcinoid Syndrome

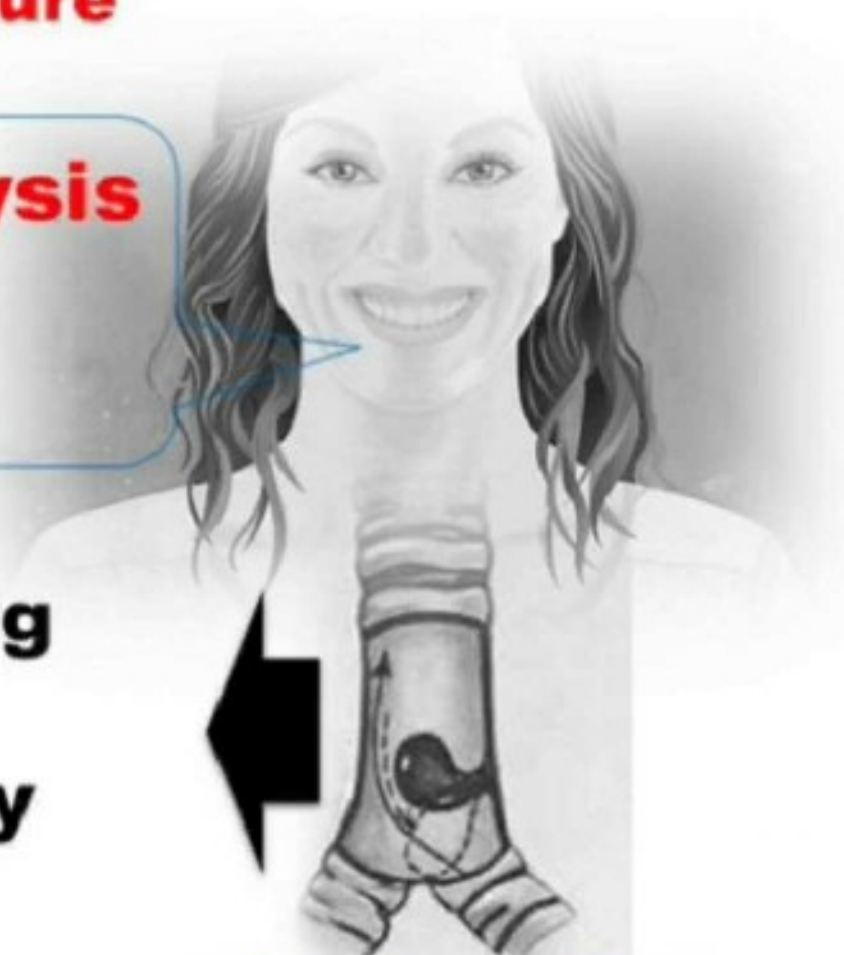
Fleeting Lung Opacity



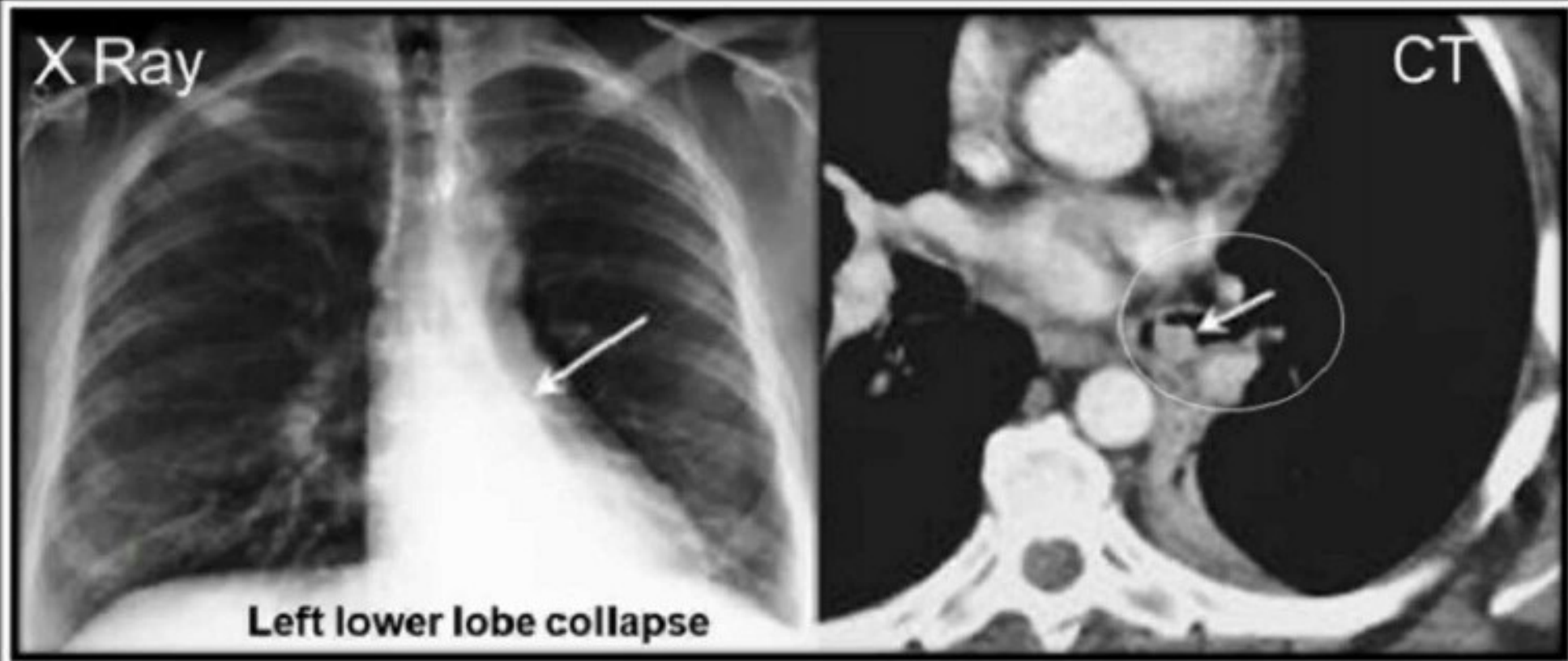
Obstruction



**Abscess
Bronchiectasis
Pneumonia**



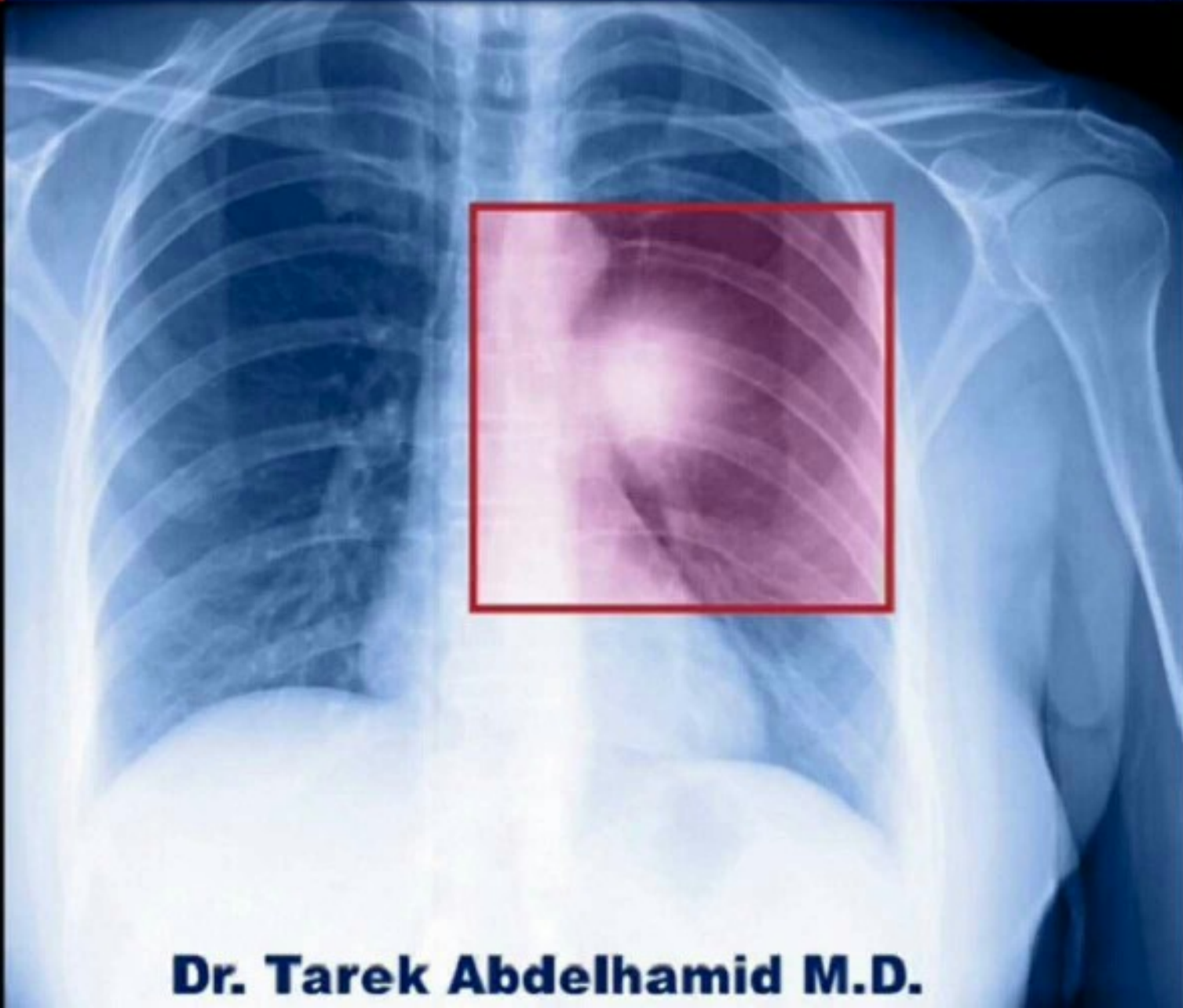
Special Investigations



Treatment

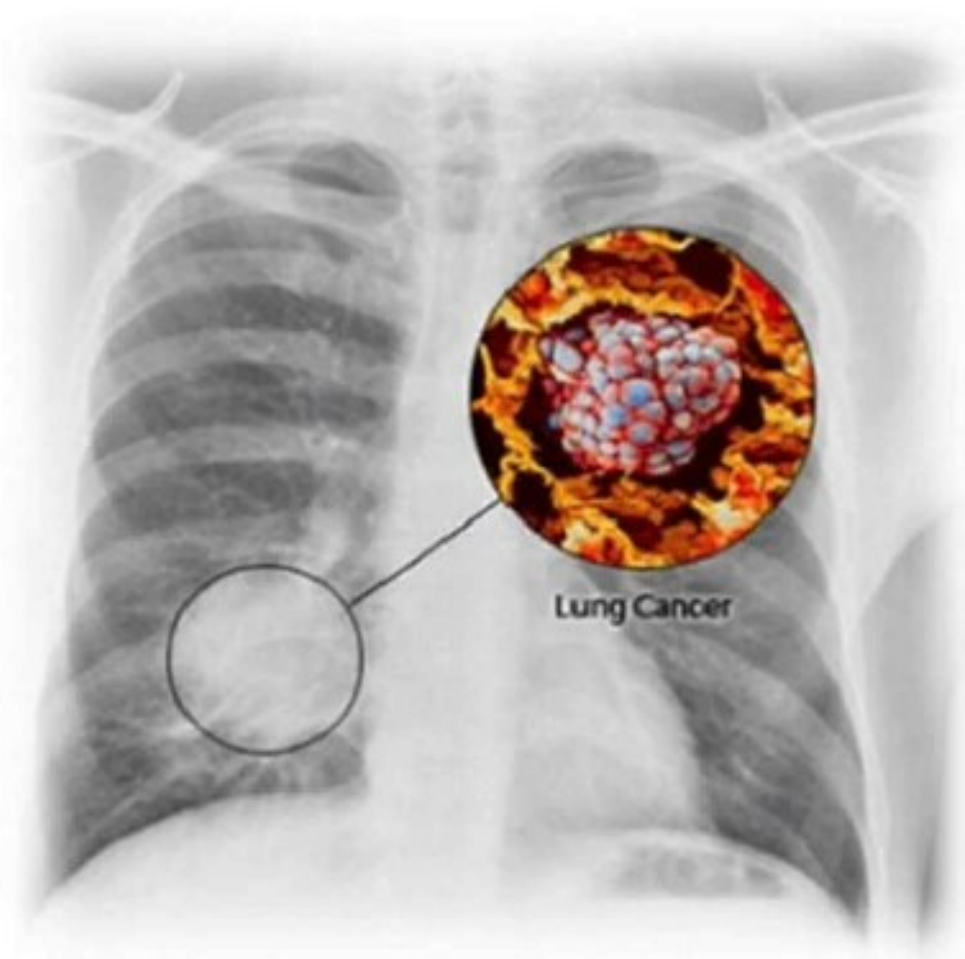
Surgery





Definition

Bronchogenic carcinoma is a form of malignancy arising from the bronchial tree.



Aetiology

- ① **Cigarette smoking**
- ② **Asbestosis (exposure to asbestos)**
- ③ **Exposure to Radon Gas**
- ④ **Exposure to Metals:**
Arsenic, Chromium, Nickel
- ⑤ **Exposure to Industrial Carcinogens**

Clinical Picture

History of
cigarette
smoking

Persistent
Cough
> 3 weeks

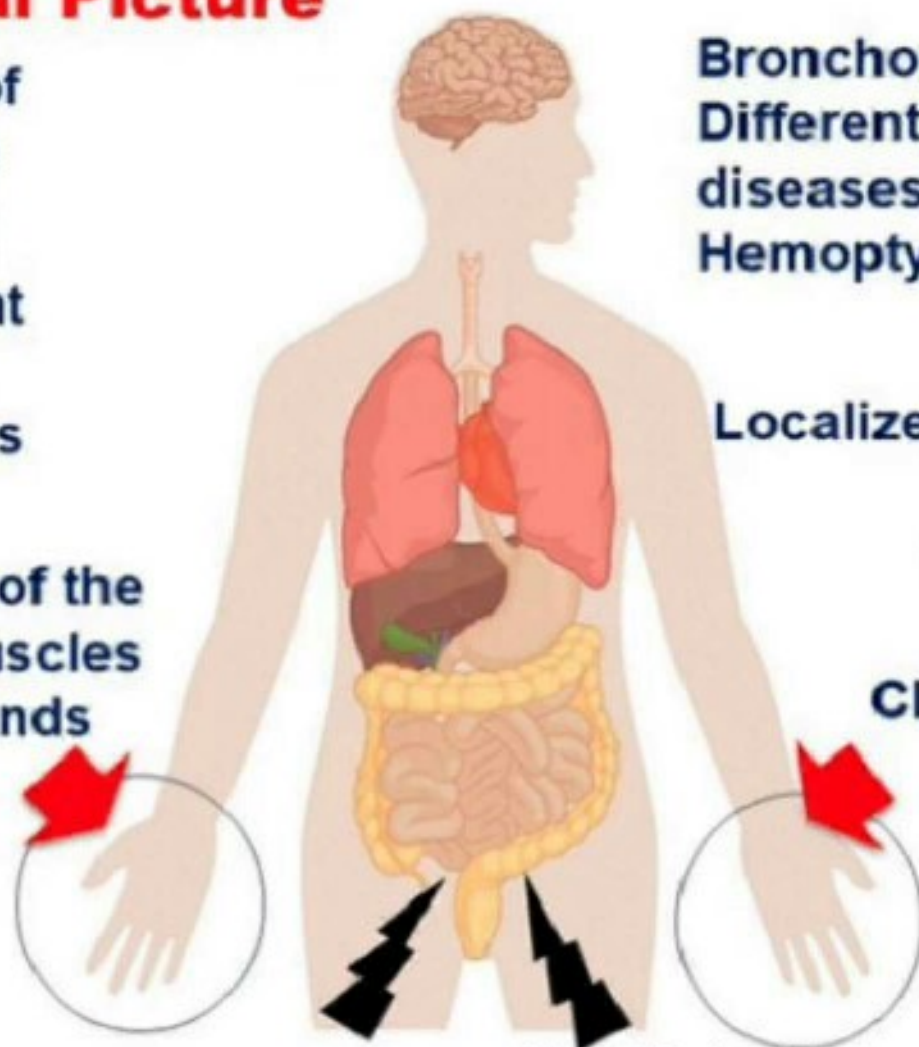
Atrophy of the
small Muscles
of the hands

Bronchogenic carcinoma is a
Differential Diagnosis of most chest
diseases: e.g. Collapse- Infection-
Hemoptysis-

Localized Wheeze



Clubbing of fingers



Metastasis to
CNS, Liver,
Bone

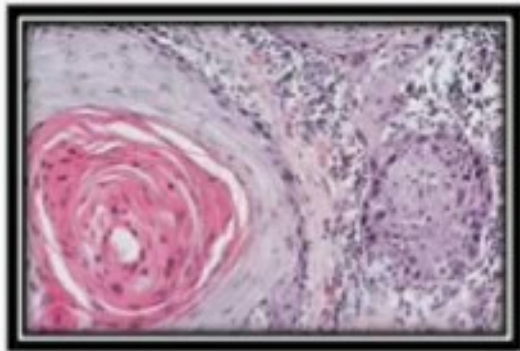
Non Metastatic
Manifestations:
Endocrinal
Peripheral
Neuropathy
LE Mythenia

Types

SSC



↑ **PTH-RP**

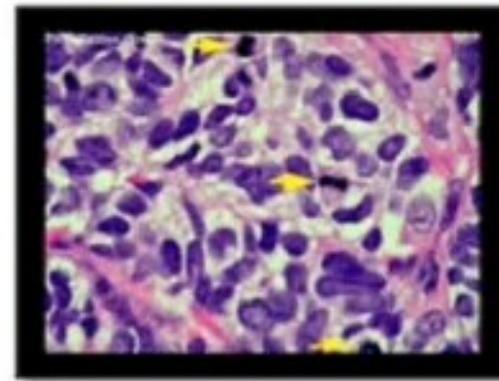


↑ **Ca**

Small Cell Carcinoma



↑ **ACTH**



↓ **K**

Special Investigations

- ① **An X-ray image of the lungs**
- ② **CT scan (small lesions)**
- ③ **Sputum cytology:**
- ④ **Biopsy** is the most diagnostic test



Treatment

Surgery + Chemotherapy